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METROPOLITAN BAKERSFIELD TRANSIT SYSTEM LONG-RANGE PLAN

Final Report

April 2012

NELSON NYGAARD

ACKNOWLEDGEMENTS

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1 EXECUTIVE SUMMARY

The Metropolitan Bakersfield Transit System Long-Range Plan (LRP) has been a collaborative effort among the Golden Empire Transit District (GET), Kern Council of Governments (Kern COG), and a consultant team consisting of Nelson\Nygaard Consulting Associates, Fehr & Peers Transportation Consultants and VRPA Technologies, Inc. A comprehensive analysis of public transportation services in the greater Bakersfield area, it has resulted in this Report and in recommended changes to transit service in the Short (2013-2020), Medium (2021-2025) and Long (2026-2035) Terms.

In the Short-Term, GET's fixed-route bus network – which has not been substantially altered in 25 years – would be reconfigured to reflect population and employment growth since the 1980s and to improve customer service and cost-effectiveness. In the Medium and Long-Terms, it would be revised yet again to accommodate projected growth and construction of a California High-Speed Rail station, additional changes would be made to Kern Regional Transit (KRT) intercity express bus service, and new modes of transit service including commuter rail would be introduced.

Each of these Service and Financial Plans conforms to funding scenarios developed for the Plan. The complete Service and Financial Plans can be found in Chapters 5 and 6 of this report, while an Implementation Strategy can be found in Chapter 7. Chapters 2 and 3 summarize Existing Conditions and Best Practices analysis used to develop the Plans, and Chapter 4 describes the public outreach and input process.

Following is a brief summary of key findings and features of each chapter.

EXISTING CONDITIONS

Existing Conditions analysis focused on three areas: relevant land use and transportation planning and policy context, existing transit services, and growth projections. As a result of the analysis (including a series of stakeholder interviews, found in Chapter 4 of this *Report)*, initial "opportunities for enhancing transit service" were identified.

Key findings included:

- While local planners have begun to embrace a shift toward somewhat denser, more mixed and more transit-supportive land use patterns and away from the area's historic heavy reliance on automobiles (the *Kern Regional Blueprint* process conducted by Kern COG is the most prominent example of this trend), the shift has not yet been clearly reflected in adopted policies and funding priorities.
- Public transit service provided by GET, the dominant operator in the metropolitan area, is limited in scope but relatively cost-effective and productive given the relatively non-transit-supportive context in which it operates. A number of other transit providers

operate within the metropolitan area (including Amtrak and Kern Regional Transit), and a California High-Speed Rail station is planned. Transportation demand management, or TDM programs, have also been put in place.

- Metropolitan Bakersfield is a primarily suburban area, with average population density just greater than 2,000 persons per square mile, and once the recession has run its course, historic patterns of rapid, primarily outward-oriented and lower-density growth are projected to return (although the *Blueprint* process does envision development of an array of activity "centers"). The population of greater Bakersfield is projected to grow by roughly two-thirds by 2035.

Based on the analysis and on the stakeholder interviews described in Chapter 4 of this *Report*, the following "opportunities for enhancing transit service" were identified:

- Service could be made faster by:
  - developing new express routes,
  - straightening existing routes, and
  - introducing new limited-stop service.
- The system's reliance on timed transfers at centralized Transit Centers could be reduced by introducing more direct cross-town routes.
- "Alternative" delivery models including Bus Rapid Transit and general public "dial-a-ride" service could be considered.
- More transit-supportive land use policies and patterns could help to make improved transit service cost-effective.
- Amenities for passengers such as shelters at bus stops could be improved.

BEST PRACTICES

"Best practices" research was conducted into three areas deemed of special interest by the project team: "alternative" service delivery models, high-capacity transit modes including Bus Rapid Transit and commuter rail, and university and transit agency partnerships. In general, it was found that:

- Alternative and creative service models such as route deviation, general public dial-a-ride and subscription services have been employed at many different transit agencies throughout California and the United States as alternatives to fixed-route service. These types of services have proven to be more suitable than traditional fixed routes in certain circumstances including low-density neighborhoods, areas with dispersed activity centers or areas where transit demand is simply low.
- The two high-capacity transit modes – BRT and commuter rail – studied in the *Best Practices Report* are not only significantly less expensive to implement than light rail transit (LRT), another high-capacity mode that has previously been considered in Metropolitan Bakersfield, but construction is also less disruptive and time-consuming. Furthermore, BRT in particular lends itself to phased implementation. (Commuter rail, however, can be relatively expensive to operate.)
- University and transit agency partnerships are becoming increasingly common as an effective way to increase transit ridership. Since GET and CSUB already have a working relationship, establishing a formal agreement would be the logical next step. For example, GET could provide a guaranteed service level and fare discounts for CSUB students,

faculty and staff, and in turn CSUB would provide financial support that would be fair and equitable for both parties. According to surveys conducted in 2009, approximately 29% of GET riders are full-time students. This is a large portion of the ridership base, which could be further increased through incentives and other measures to attract a greater share of the student population.

PUBLIC OUTREACH

For the LRP, a multifaceted strategy to collect input from stakeholders, GET operators, and the general public was developed and executed. Following are key findings from different components of that process.

- *Stakeholder Interviews.* Approximately two dozen one-on-one interviews were conducted with elected officials, public agency staff and community leaders. Participants were asked about existing transit services and about the role of public transportation in Bakersfield today and in the future. Common perceptions included:
  - Transit is simply not as convenient as driving in Bakersfield, and as a result, those with choices (access to private autos) typically don't use transit.
  - Transit is not as convenient as driving primarily because transit takes more time.
  - Several suggested ways they thought service might be made more convenient, comfortable, and cost-effective including new express bus routes for commuters, creative solutions to provide better coverage to outlying areas where existing bus service is infrequent or nonexistent, enhanced amenities at bus stops, more service focused on college students, and improvements to paratransit service.
  - Despite the limitations of existing service, most of those interviewed expressed support for public transit as a concept and for GET as an organization, recognizing the health, environmental, and equity benefits it offers and its important role in the community.
  - At the same time, there is a great deal of skepticism that Bakersfield will ever be a more urban and transit-oriented community. There is widespread agreement that Bakersfield's relatively low-density, auto-oriented patterns of development are a reflection of the community's preferences, and that too much regulation can be counterproductive.
  - Planning staff from agencies other than GET believe it might be possible to make future developments more transit-supportive using incentives, and that GET staff could be more proactive in working with other agencies and directly with developers.
  - There is a great deal of skepticism that voters would approve any significant tax increase for transit, and that expensive investments such as light rail transit could be justified on a cost-benefit basis in the future. (However, some believe more urban forms of transit might eventually make sense).
  - Finally, there is a great deal of uncertainty about the possible impact of high-speed rail if it is built.
- *Roundtable Meetings* were held at two important times in the planning process with key stakeholders. The first set of meetings was held in April 2010 to introduce the project and solicit feedback on transit needs and short and longer-term priorities. In March 2011, a second set of meetings was held to present the major findings from the Existing Conditions Report and to share the draft short-term, midterm and long-term service

plans. There was support for the proposed service recommendations with strong interest and support for frequent and express service and the new BRT service in downtown Bakersfield.

- *Operator Interviews.* Informal interviews were conducted with GET operators in order to gather information about the operational efficiency of individual routes and the system as a whole. Operators also offered insight into potential areas for expansion and other opportunities for improvement.
- *Public Outreach* consisted of several forums and venues to engage as many people as possible and to understand the opinions and attitudes of both existing transit riders and non-riders. Outreach events were held at the Kern County Fair, Bakersfield College, CSUB and at GET transfer centers. A short survey was conducted to solicit reaction to the service plan which revealed overall positive response.
- *"Smithville" Planning Game.* As part of a GET Board of Directors meeting, Nelson\Nygaard staged a session of the "Smithville" Transit Planning Game©. In the game, participants are invited to "play" transit service planner for a few hours, developing conceptual route networks, frequencies, and spans of service based on limited resources. The game's rules are described in Chapter 4. Key elements common to three or more of the four conceptual service plans that were developed included:
  - High-frequency service in trunk corridors
  - Less emphasis on transit centers
  - More direct routes
  - Fast, frequent service to Bakersfield College and CSU Bakersfield
  - Nontraditional services (e.g., general public dial-a-ride) in outlying areas
  - Service to rural destinations
  - No late-night service

SERVICE PLANS

Using the Existing Conditions and Best Practices analysis, findings from outreach, the recently adopted GET Vision Statement and Planning Guidelines, and general fixed-route transit planning principles, Short, Midterm, and Long-Term Service Plans were developed. The plans conform to the following financial scenarios:

- *Short-Term (2013-2020).* Operate no more than 280,000 annual hours of revenue service, a slight reduction from the current (2011) service levels.
- *Midterm (2021-2025).* Operate no more than 360,000 annual revenue hours (this scenario assumes passage of a sales tax or other revenue-generating measure; in the absence of additional funding, continuation of the Short-Term Plan is assumed).
- *Long-Term (2026-2035).* No financial constraints.

All plans focus on fixed-route service, assuming that GET would continue to provide Americans with Disabilities Act (ADA) complementary paratransit service.

Short-Term Service Plan (2013-2020)

The Short-Term Plan calls for a complete reconfiguration of GET's fixed-route network. Prominent features of the Plan include:

- A decreased emphasis on timed connections at transit centers.
- A new transit center at CSU Bakersfield.
- Increased service to CSU Bakersfield and Bakersfield College.
- Faster cross-town trips using
  - New Express routes
  - New "Rapid" routes making only limited stops (described in the next section, service categories)
  - More direct routes
  - Wider spacing of stops
- A more straightforward and understandable route system

There would be five categories of service:

- *Rapid (Routes 1 & 2).* Buses would stop every two-thirds of a mile on average, and would run every 15 minutes, including evenings and weekends. Buses and stops would be specially branded, and there would be high-quality amenities at stops. Over time incremental improvements to speed and reliability would be made.
- *Crosstown (Routes 10-16).* Buses would run every 30 minutes during the day and hourly during evenings.
- *Circulator (Routes 21-22).* Buses would run hourly during the day.
- *Express (Routes 117 and X92).* Service levels would vary.
- *Circulator/Express (Routes 121-123).* Buses would run hourly during the day. Circulator/Express routes would be a combination of "local-stop" and express service.

Midterm (2021-25) & Long-Term (2026-2035) Service Plans

In the Midterm, it is assumed that additional funding would become available, allowing for not only more service but a different type of route network, a "grid" system in which transfers would be made at points throughout the system rather than at central Transit Centers requiring route deviations. Such networks offer more direct and easier-to-remember routes, but are dependent on more frequent service, as transfers cannot be timed at many different (rather than a few) locations.

Both the Midterm and Long-Term Plans would accommodate projected growth, serving planned *Kern Blueprint* "centers." The Downtown and Southwest Transit Centers would be phased out; however, several routes would serve the planned California High-Speed Rail station. Commuter rail service would be introduced in the high-speed rail right-of-way to the northwest, the Rapid service introduced in the Short-Term would be upgraded to full Bus Rapid Transit service with dedicated rights-of-way and light rail-like stations, and "enhanced" KRT intercity express bus routes would be introduced.

The key differences between the plans are functions of funding and timing. In the Midterm, when funding would remain limited (the Long-Term financial scenario is unconstrained), some routes would operate less frequently and some would not extend as far. Additionally, in the Long-Term, two more commuter rail lines might be introduced, and BRT service might be upgraded to light rail transit.

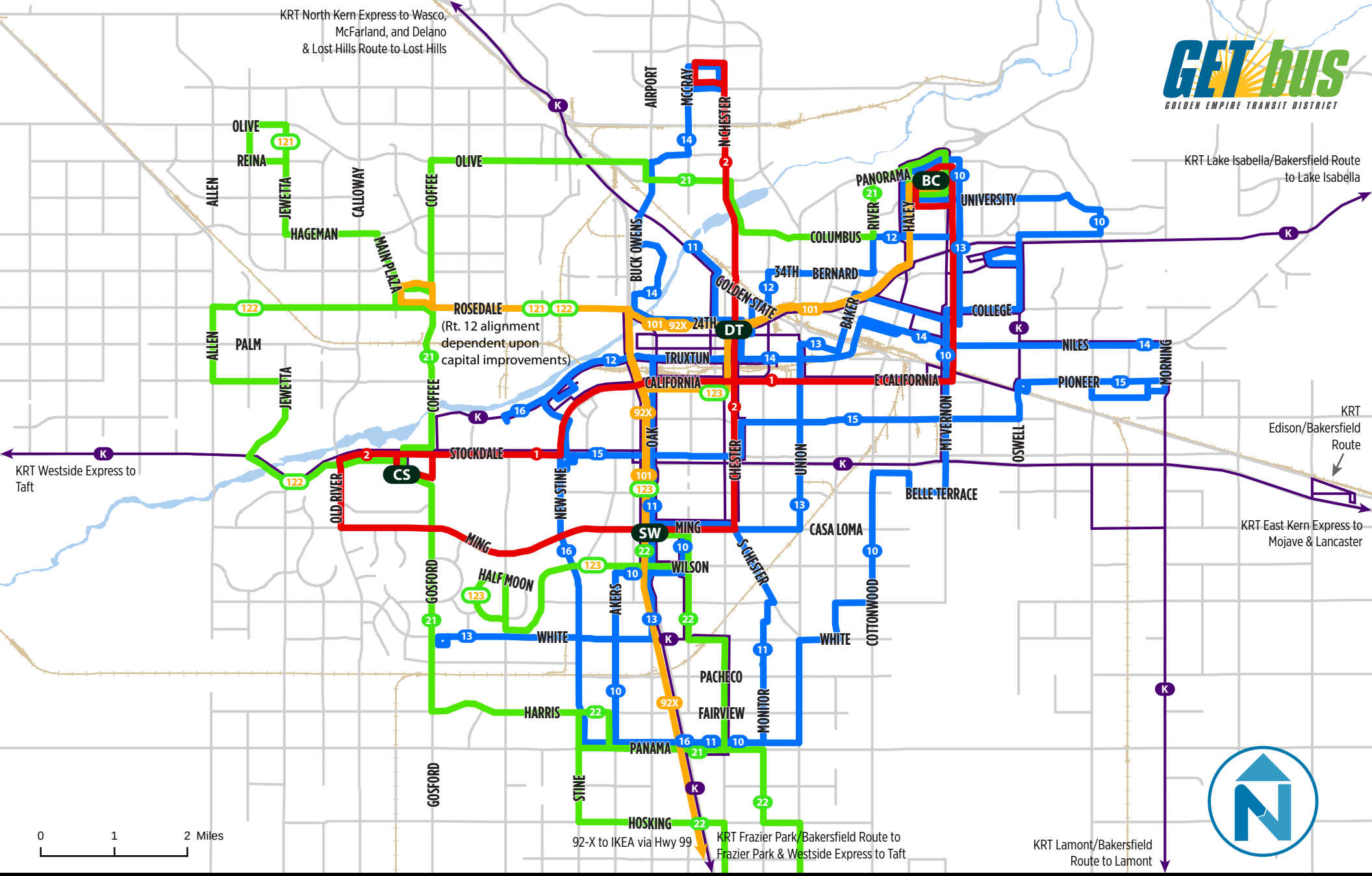


FIGURE 1-1: DRAFT PROPOSED SHORT-TERM ROUTE NETWORK

GET Routes

Rapid (2)
Mon-Fri 6am-11pm
Sat-Sun 7am-7pm
every **15** minutes

Express (101)
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **30** minutes

Mon-Fri 7-11pm
every **60** minutes

Circulator (21)
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **60** minutes
No evening service

Crosstown (13)
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **30** minutes

Mon-Fri 7-11pm
every **60** minutes

Circulator Express (123)
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **60** minutes
No evening service

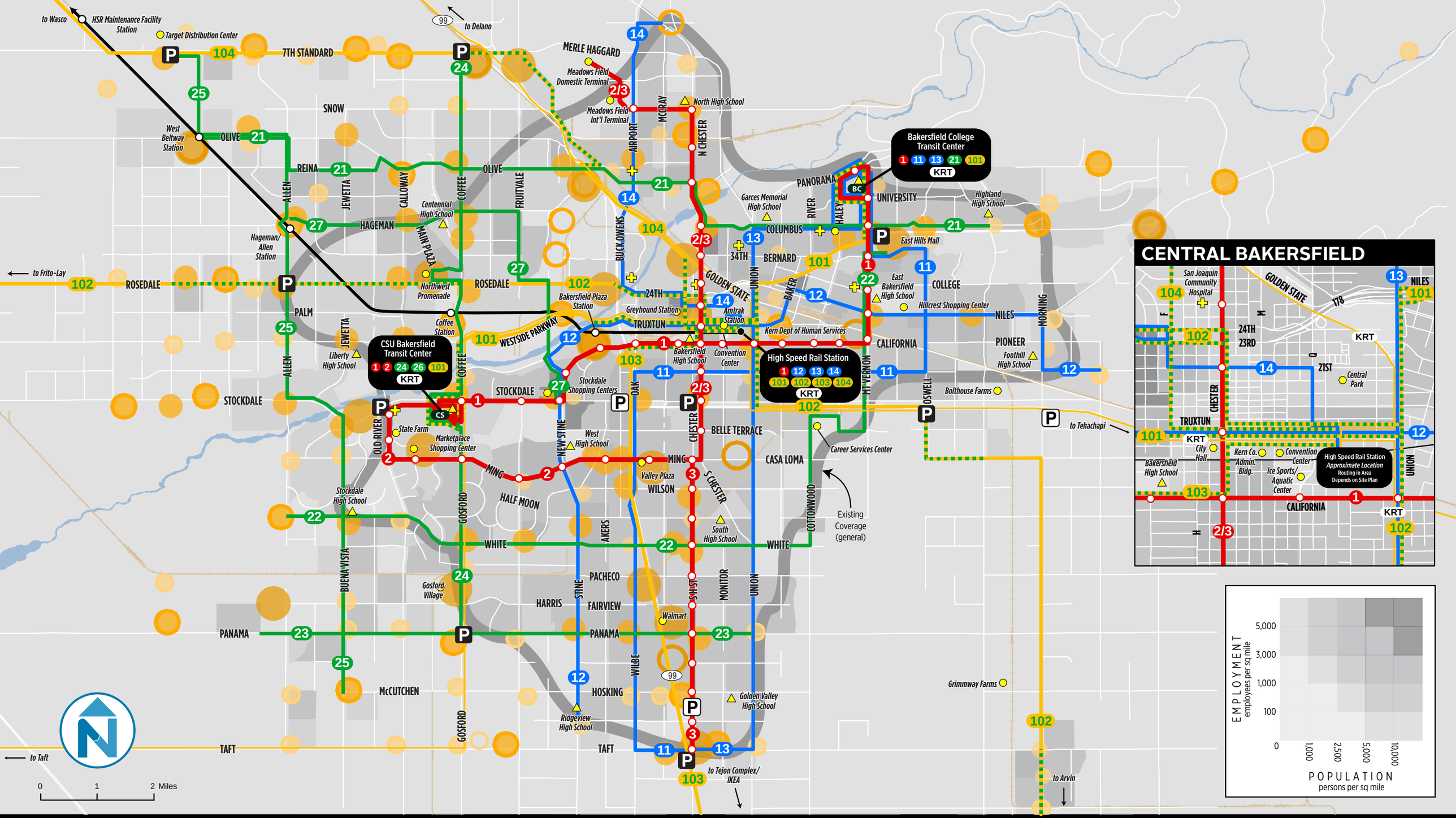
Transit Centers

- DT Downtown
- SW Southwest
- BC Bakersfield College
- CS CSU Bakersfield

KRT Routes

(K) Kern Regional Transit

Data Sources: Kern COG, City of Bakersfield GIS



CENTRAL BAKERSFIELD

FIGURE 1-2: DRAFT PROPOSED MIDTERM ROUTE NETWORK & POPULATION-EMPLOYMENT DENSITY (2020)

GET HIGH CAPACITY (BRT)
Every 15 minutes (7.5 minutes combined)
1 2 3

GET LOCAL BUS
Every 20 minutes
11 12 13 14
Every 30-60 minutes
21 22 23 24 25 27

GET EXPRESS BUS (with local segments)
Up to Every 20 Minutes
101 102 103 104
Commuter Rail

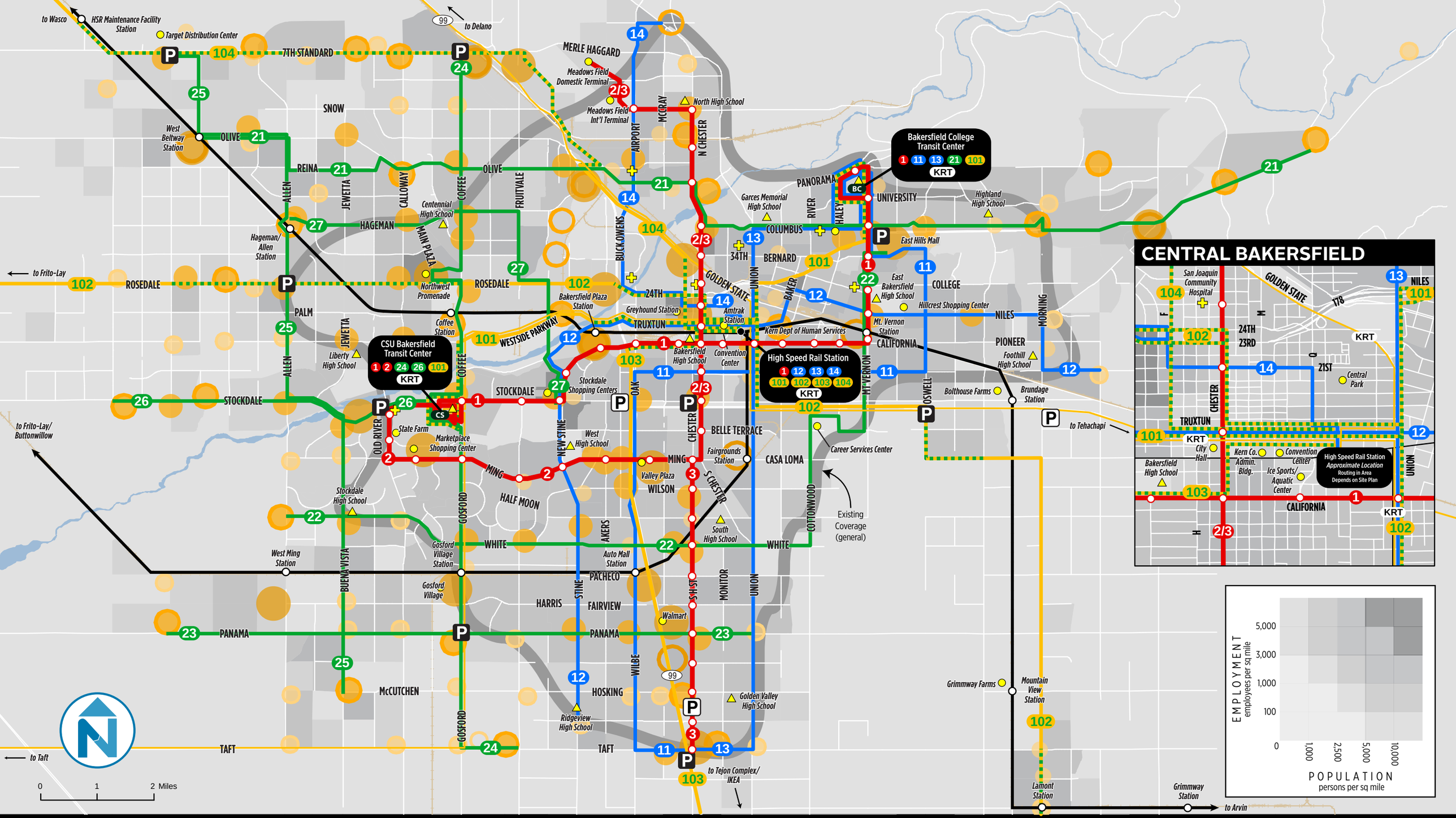
Enhanced KRT Service
P Park & Ride
P Proposed Park & Ride (commuter rail stations also provide parking)

Existing Coverage (general)

CENTERS
Existing/Planned
Potential
Village (Neighborhood)
Town (Grocery)
Community (Major Retail)

Data Sources: Kern COG, City of Bakersfield GIS

GET bus
GOLDEN EMPIRE TRANSIT DISTRICT



CENTRAL BAKERSFIELD

FIGURE 1-3: DRAFT PROPOSED 2050 ROUTE NETWORK & POPULATION-EMPLOYMENT DENSITY (2035)

GET HIGH CAPACITY (Light Rail or BRT)
Every 10 minutes (5 minutes combined)
1 2 3

GET LOCAL BUS
Every 15 minutes
11 12 13 14
Every 30 minutes
21 22 23 24 25 26 27

GET EXPRESS BUS (with local segments)
Up to Every 15 Minutes
101 102 103 104
Commuter Rail

Enhanced KRT Service
P Park & Ride
P Proposed Park & Ride (commuter rail stations also provide parking)

Existing Coverage (general)

CENTERS
Existing/Planned
Potential
Village (Neighborhood)
Town (Grocery)
Community (Major Retail)

Data Sources: Kern COG, City of Bakersfield GIS

GET bus
GOLDEN EMPIRE TRANSIT DISTRICT

FINANCIAL PLAN

The short-term plan is based on conservative growth assumptions for existing funding sources and is financially sustainable in the eight-year planning horizon. However, federal and state discretionary grant funds will be needed to pay for capital investments such as vehicle replacements, technology enhancements, improvements to existing transit centers and construction of new facilities. Construction of a new transit center at Bakersfield College is already underway and has been fully funded. The Short-Term Service Plan Funding Strategy summarized in Figure 1-4 compares the total operating and capital costs to expected funding sources.

Figure 1-4 Short-Term Funding Strategy

Operating Funding Plan	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Revenue Hours and Costs									
Revenue Hours									
Fixed Route Service	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000
GET-A-Lift	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000
Total Operating Costs	$21,381,515	$22,022,961	$22,683,649	$23,364,159	$24,065,084	$24,787,036	$25,530,647	$26,296,567	$27,085,464
Operating Funds Available									
Farebox Revenue									
Fixed Route Service	$5,151,985	$5,255,025	$6,494,909	$6,819,655	$6,956,048	$7,871,927	$8,029,366	$8,189,953	$8,353,752
GET-A-Lift	$102,441	$102,441	$110,566	$111,671	$112,788	$132,902	$134,231	$135,573	$136,929
Subtotal	$5,254,426	$5,357,465	$6,605,475	$6,931,326	$7,068,836	$8,004,829	$8,163,597	$8,325,527	$8,490,681
Other Misc. Revenue	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Total Operating Revenues	$5,454,426	$5,557,465	$6,805,475	$7,131,326	$7,268,836	$8,204,829	$8,363,597	$8,525,527	$8,690,681
Operating Subsidy Required	$15,927,090	$16,465,495	$15,878,174	$16,232,833	$16,796,248	$16,582,207	$17,167,050	$17,771,040	$18,394,782
Operating Funds									
FTA Section 5307 Allocation	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188
Transportation Development Act (TDA) Allocation	$11,988,901	$12,527,307	$11,939,986	$12,294,645	$12,858,060	$12,644,019	$13,228,862	$13,832,852	$14,456,594
% of Total TDA Allocation	*98%*	*98%*	*90%*	*89%*	*90%*	*85%*	*85%*	*86%*	*86%*
Total Operating Funds	$21,381,515	$22,022,961	$22,683,649	$23,364,159	$24,065,084	$24,787,036	$25,530,647	$26,296,567	$27,085,464
Capital Funding Plan									
Total Capital Costs	$6,056,333	$7,770,600	$9,716,968	$6,121,372	$3,017,734	$3,085,887	$395,524	$2,098,390	$684,277,348
Federal Funds									
FTA Section 5307 Allocation	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563
FTA Section 5307 Grant		$2,400,000							
FTA Section 5309 Grant	$2,238,533	$1,800,000		$800,000					$30,000,000

Operating Funding Plan	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
FTA Section 5310 Grant	$100,000				$100,000	$100,000			$0
CMAQ/STP Grant	$1,651,478	$1,991,925							$30,000,000
State Funds									
TDA Allocation	$275,699	$227,877	$1,325,405	$1,501,363	$1,489,788	$2,277,743	$2,289,770	$2,306,525	$2,328,358
Prop 1B PTMISEA Grant			$7,000,000						
Local Funds									
Air Pollution Control District Grant									
Public/Private Partnership		$500,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Reserve Funds Needed				$1,599,447					$9,000,000
Other Capital Sources									*$610,728,427*
Total Capital Revenues	$6,386,273	$9,040,365	$10,545,968	$6,121,373	$3,810,351	$4,598,306	$4,510,333	$4,527,088	$684,277,348
Annual Surplus/(Deficit)	$329,940	$1,269,765	$829,000	$0	$792,617	$1,512,419	$4,114,809	$2,428,698	$0
Reserve		*$329,940*	*$1,599,704*	*$829,258*	*$829,258*	*$1,621,875*	*$3,134,294*	*$7,249,102*	*$677,800*

The Midterm Service Plan assumes two funding scenarios. The first (Fully Funded Scenario) assumes passage of a countywide half-cent sales tax for transportation with a portion of sales tax revenues dedicated to transit operations and capital improvements. Under this scenario, the Midterm Service Plan could financially support a more robust service than in the short-term. The conversion of Rapid service to full Bus Rapid Transit (BRT) is anticipated in the midterm and consists of dedicated transit lanes, enhanced stations, and prepaid, level boarding. Since service is proposed to begin in FY 2020/21, capital costs related to BRT implementation are shown in FY 2019/20, the last year in the short-term plan.

The second (Financially Constrained Scenario) assumes that no new funding is available and service enhancements would not be financially feasible. The only change is that Rapid routes could be converted to full BRT service.

Both midterm scenarios project an accumulation of reserve funds toward the end of the period. This assumes that GET will be successful in securing discretionary grant funds to pay for major capital expenses. It also assumes that GET follows a "pay as you go" approach and does not finance large capital projects and incur debt. Any reserve funds that are accumulated should be "banked" to pay for capital projects anticipated in the long-term, or can be used to pay for unanticipated operating or capital needs.

The Long-Term Service Plan includes a further expansion of fixed-route service hours to 530,000 annually. Two additional commuter rail lines are anticipated in the long-term, and BRT service may be upgraded to Light Rail Transit (LRT). The Long-Term Service Plan represents a financially unconstrained picture of future transit service in the Bakersfield metropolitan area, and thus focuses solely on meeting the mobility, land use and environmental needs of the region with no restrictions imposed by the financial feasibility of implementation.

In this current economic climate of fiscal austerity it is challenging for GET to fund its current operations plus pay for planned capital improvement projects. GET is encouraged to seek discretionary capital grants; however, given the fiscally constrained environment in the near future and possibly longer-term and the competitiveness of discretionary capital funds, it is not realistic to expect that state and federal government funding alone will be sufficient. GET, working collaboratively with Kern County and other jurisdictions, will need to generate local revenue sources. The most promising potential is a countywide half-cent sales tax for transportation improvements with a percentage of the revenues dedicated for transit. This potential funding opportunity as well as other possible local, state and federal funding sources including private sector initiatives is discussed in Chapter 6, The Financial Plan.

IMPLEMENTATION AND NEXT STEPS

The implementation strategy discusses the steps that GET might take to implement recommendations in the plan and the sequence in which they could be carried forward. It provides detailed guidance on implementation of the Short-Term Service Plan (assuming implementation in July or September 2012), including service planning, operations, bus stops and facilities, and marketing and public information. It also discusses more general recommendations for implementation of the Midterm and Long-Term Service Plans.

The *Report* concludes with recommended "transit-supportive policies," i.e. land use and other policies not directly related to the provision of transit service, but which would serve to support and allow for high-quality, cost-effective service. Implementation of these policies would require

support from parties not directly involved in the LRP, including elected officials. Recommended policies include:

- Principles
  - Support transit use at the local level and on a regional scale.
  - Focus development and infrastructure on key cores and corridors.
  - Design streets and new developments to foster street activity and encourage transit use.
- Policies
  - Land Use
    - Land uses should be mixed both horizontally and vertically. Support and enhance major activity centers.
    - Land use intensities should be at levels that will encourage use of transit and support pedestrian and bicycle activity.
    - Parking requirements (and parking provision) should be compatible with compact, pedestrian and transit-supportive design and development.
  - Circulation and Connectivity
    - The transportation and circulation framework should define compact districts and corridors.
    - New residential developments should include streets that provide connectivity.
    - Transit improvement projects should be targeted at areas with transit-supportive land uses.
  - Urban Design
    - Streets should be designed to support use by multiple modes,
    - Buildings should be human scaled.
    - The impact of parking on the public realm should be minimized.

2 EXISTING CONDITIONS

In June 2010, Nelson\Nygaard released the *Metropolitan Bakersfield Transit System Long-Range Plan Existing Conditions Report*. The 147-page report remains available as a separate document. In this chapter, key findings from the report are summarized and relevant "opportunities for enhanced transit service" identified at the end of the report are repeated in order to provide context for the Service and Financial Plans in Chapters 5 and 6 of this report.

KEY FINDINGS

Planning Context

In general, recent and ongoing land use and transportation planning efforts in Metropolitan Bakersfield have focused on somewhat stronger management of growth than has historically taken place: a gradual transition over time to somewhat more focused, compact and transit-supportive patterns of development. However, there appears to remain something of a disconnect between the rhetoric of major land use planning documents in Bakersfield and the reality of the funding priorities in programming documents such as the Kern COG Regional Transportation Plan (Kern COG has recently embarked on a study to revisit its policies and guidelines for state and federal-aid programs to reflect the region's new focus on sustainable communities and environmental justice). Moreover, land use planners and policymakers continue to be hesitant to burden developers with too many regulations, preferring an incentives-based approach to encourage them to make accommodation for transit service in their developments.

A "business as usual" approach that allows for only modest, gradual change is unlikely to achieve state-mandated carbon-reduction targets, to significantly improve air quality, or to provide any of the other health, congestion and household benefits associated with higher transit usage. However, with the Metropolitan Bakersfield General Plan Update now underway – including a Climate Change Action Plan, CCAP – opportunities exist for land use and transportation planners to work together to develop creative solutions and a comprehensive strategy to make transit a more attractive alternative.

Existing Transit Services

Description

GET is the dominant provider of transit service in Metropolitan Bakersfield; specifically, its network of fixed bus routes accounts for the vast majority of trips on public transportation in the area. The general trend in GET fixed-route ridership has been positive for some time, and in FY 2008/09 it reached 7.5 million boardings (in 2009/10 ridership declined slightly). However, the fixed-route network has not been significantly altered for nearly a quarter-century, a period during which the population of GET's service area has nearly doubled. As might be expected, routes serving older, more urban corridors and neighborhoods are much more frequent and

generally more productive and cost-effective than those serving newer and more affluent suburban developments. Due to the design of the network, the majority of riders (53%, according to a recent survey) must transfer between routes to complete their trips. Through a public-private partnership, GET has recently introduced express service to a major employment center in rural Kern County (Tejon Ranch).

Other transit services in Metropolitan Bakersfield include Kern Regional Transit, which operates intercity bus routes throughout Kern County, including several that connect to GET routes in Bakersfield (KRT service, however, is relatively infrequent); Amtrak, which operates trains north to other Central Valley cities and the San Francisco Bay Area and buses south to Los Angeles; intercity bus operators including Greyhound, Orange Belt Stages, and Airport Bus of Bakersfield; and paratransit services operated by GET-A-Lift, KRT, North of the River Recreation, and Park District and New Advances for People with Disabilities. (The Downtown Trolley, a partially privately funded service that operated for a few hours each weekday, was discontinued in 2010.)

If built, the planned California High-Speed Rail system would include a stop in Bakersfield. Existing plans call for the station to be located near the existing Amtrak station, near Downtown Bakersfield; however, the Bakersfield City Council has asked the California High-Speed Rail Authority to develop alternate alignments with fewer impacts (including potential demolition of several dozen existing buildings), and the status of the project is currently uncertain.

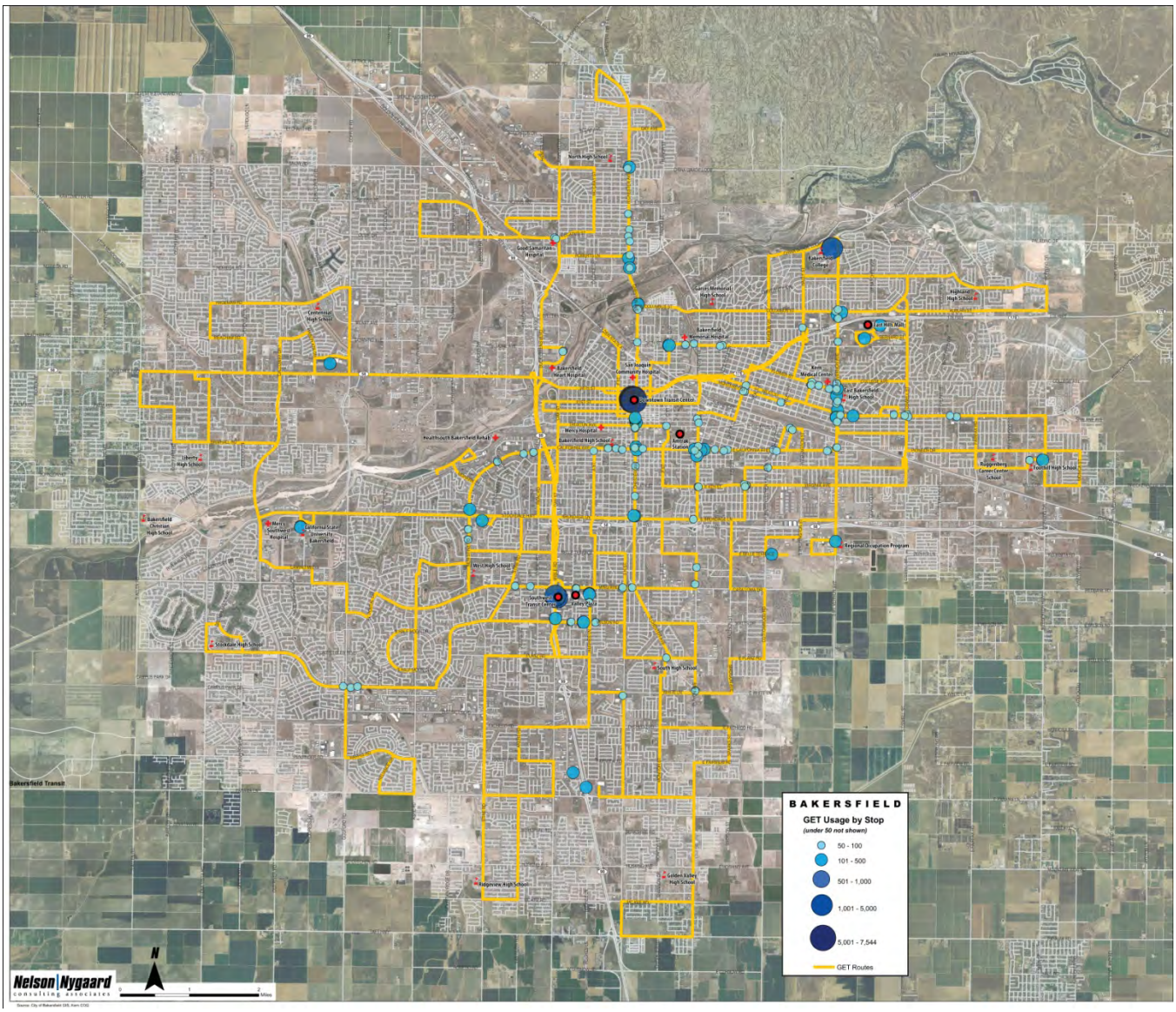
Finally, a pair of transportation demand management (TDM) programs are notable: Kern Commuter Connection, a resource for car- and van-poolers, and the eTrip Rule program, under which large employers must develop plans to reduce shares of drive-alone commuting by their employees.

Data Collection

As part of the LRP, Nelson\Nygaard completed an extensive data collection effort on GET's fixed routes in April 2010. Among key findings:

- Numbers of weekday boardings and alightings at individual stops are generally about what one would expect based on adjacent land uses, frequency, and span of service. Most of the busiest stops can be found on routes, in segments, and in corridors previously identified by GET staff as the system's most important. Both GET and ridecheck data reveal that several routes perform relatively well (most notably Routes 2 and 5), while others perform relatively poorly (most notably Routes 12, 15 and 18).
- Analysis of boarding and alighting data reveal load factors that are generally consistent with frequency and ridership levels. One route, Route 17, has relatively modest total ridership but a relatively high load factor due to unusually high productivity.
- Most routes meet GET's schedule adherence standard of no more than zero minutes early or five minutes late at timepoints between 70% and 80% of the time. Interestingly, many departures were early rather than several minutes late. Routes identified by GET as experiencing on-time performance issues (including Routes 2 and 11) were found to indeed often run ahead of or well behind schedule.

Figure 2-1 Busiest GET Stops



Summary

On the whole, existing transit service in Metropolitan Bakersfield might be said to only do a few things — but to do them reasonably well. If the existing transit system is limited in scope, it appears to perform at a relatively high level. Overall productivity is good given the challenges to effective transit service of the environment in which GET and KRT operate; local transit providers appear to deploy their limited resources wisely.

Development and Growth

Most major destinations in Metropolitan Bakersfield can be accessed by public transit. However, just over 1% of Bakersfield residents commute by transit. Population density in the City of Bakersfield is just over 2,000 persons per square mile, although some neighborhoods have densities in excess of 10,000 persons per square mile. There are several areas with employment densities greater than 5,000 workers per square mile. The population of Metropolitan Bakersfield is projected to increase by more than 20% by the year 2020 and by roughly two-thirds by 2035 (and much of this growth will occur in outlying areas). While the economy has slowed construction somewhat, a number of major residential and commercial developments are still planned, primarily in outlying areas to the west (a major “infill” development, Bakersfield Commons, is planned for the near west side).

OPPORTUNITIES FOR ENHANCING TRANSIT SERVICE

At the conclusion of the *Existing Conditions Report*, a number of opportunities for improvements to transit service were identified. These findings were based on the analysis of planning documents, transit services, and growth projections described in this chapter, as well as the Stakeholder Interviews described in Chapter 4 of this document, Outreach. Only those opportunities relevant to understanding of the recommended Service and Financial Plans are repeated here.

Faster Service

First, new express routes might be developed. GET currently offers just two express routes, and one of them, Route 17, is the most productive in the system. Route 17 is somewhat unique in that it is not just oriented toward commuters, but serves a market with high all-day demand. Route X92, meanwhile, is a more traditional commuter route (although it, too, runs all day, with very low productivity on non-commuter trips), but it is nontraditional in that it is the result of a public-private partnership. A great deal of interest appears to already exist in pursuing more such arrangements.

Second, trunk routes could be made more direct. Currently, major routes often follow somewhat meandering alignments, often making significant diversions mid-route to serve transfer centers or other destinations and often ending in large, one-way loops through suburban neighborhoods. It might be possible to develop alternate alignments that serve these destinations and neighborhoods more directly and effectively.

Third, limited-stop service might be introduced in major corridors. While this would likely require additional resources, limited-stop service tends to be significantly more productive and cost-effective than service that is slowed by frequent stops. Some lines might even be "super-limiteds" providing direct connections between major destinations, more akin to the existing Route 17 Crosstown Express.

Transfers

The system's reliance on and requirement of transfers should be reduced. More than half of GET riders must transfer between routes to complete their trips, an unusually high number but one that is not especially surprising given the design of the system, with all but two routes connecting to one of the two transfer centers. Many riders must travel significantly out of direction and furthermore, not all transfers are timed — and studies have established that passengers experience time spent waiting for a bus as significantly longer than it actually is. While a "grid" network with more crosstown and fewer radial routes would pose challenges of its own, it could deliver benefits above and beyond reduced transfer requirements, including reduced capital costs for new and/or larger transfer centers.

Alternative Delivery Models

One or more limited routes might be upgraded to bus rapid transit, or BRT service (as a longer-term option). This process could be gradual and phased as funding allows. Significant improvements to speed, reliability, and passenger amenity can often be achieved without the potentially expensive and disruptive step of converting lanes of traffic to bus-only lanes, and lower-cost "rapid bus" lines might be a good fit for Bakersfield in the near term. Over the longer term, more aggressive BRT treatments, as well as light rail and commuter rail, might be worthy of consideration.

Finally, more cost-effective alternatives might be found to replace low-performance routes such as Routes 12 and 18. While these routes are not terribly expensive to operate due to the generally low level of service they offer, they are used by only a few hundred people (by comparison, there are nearly 4,000 boardings per day on the busiest route in the system, Route 5). The fixed-route model might not be suitable for every context; instead, creative solutions such as dial-a-ride service might be more appropriate.

Transit-Supportive Policies

Many stakeholders commented that the current pattern of development serve as an impediment to promoting and accessing transit in Bakersfield. While there has been some recent shift toward more mixed-use, compact, pedestrian- and transit-oriented development models, and while development has slowed somewhat with the economy, the prevailing pattern remains one of rapid growth consisting primarily of low-density "sprawl" development. Such development is extremely difficult to effectively serve by transit, and if it continues to dominate, the more cost-effective alternative for GET and for Metropolitan Bakersfield may ultimately be to simply accept that some areas cannot be served by transit.

To the extent that new development is somewhat denser, more mixed-use and pedestrian-oriented, and to the extent that the "centers" concept called for in land use planning policies is realized, so that there are a number of relatively significant nodes around the Bakersfield area, the "super-limited" service model previously identified might make a great deal of sense.

In existing, relatively dense neighborhoods and corridors such as those found in much of East Bakersfield, introduction of limited and rapid lines might be feasible. Introduction of new express services to job centers both within Metropolitan Bakersfield and in outlying areas may also prove desirable in some instances, although the dispersed patterns of both population and employment throughout the area may limit the number of opportunities available. (In particular, Bakersfield's

central business district may not be sizable enough to serve as the hub for an extensive network of radial express lines connecting to outlying park and rides.)

Passenger Amenities

Amenities for transit passengers such as benches and shelters are somewhat limited. Providing sidewalks where none exist, and improving curb cuts and ramps to make it easier for seniors and persons with disabilities to maintain their independence, is a good place to start. Ultimately, creating walkable, transit-friendly and transit-accessible environments will provide Bakersfield with the tools to ensure that transit service can reach its full potential. To achieve this objective, the City of Bakersfield and GET should further develop channels of communication; working together to address transit issues at the design stage of new development projects.

Shelters are costly, but in an environment such as Bakersfield's they can hardly be considered a luxury, and they should be high priorities for capital investment. Other improvements could be delivered at no cost: converting more stops to red zones so that riders — including passengers in wheelchairs — do not have to maneuver through and around cars when getting on and off of buses would improve not just comfort and convenience, but social equity.

3 BEST PRACTICES

In October 2010, Nelson\Nygaard released the *Metropolitan Bakersfield Transit System Long-Range Plan Best Practices Report*. The 49-page report remains available as a separate document. In this chapter, "lessons learned" from the report are repeated in order to provide context for the Service and Financial Plans in Chapters 5 and 6 of this report.

OVERVIEW

The purpose of the *Best Practices Report* was to document and learn from the experiences other transit agencies have had with services and programs that it was thought might be relevant for GET.

The report contained best practices and case studies covering the following major areas:

- Alternative Service Delivery Models
  - General Public Dial-A-Ride (curb-to-curb, reservation-based service)
  - Flex or Deviated Fixed Route Service (in which operators may "deviate" up to a certain amount of distance from a route at a rider's request)
  - Subscription Service (similar to that provided by private vanpools or shuttles)
- High Capacity Transit/Quality Bus Service (commuter rail and "Bus Rapid Transit," or bus service designed to be faster, more reliable, and higher quality overall)
- University and Transit Agency Partnerships (such as universal pass programs)

Key findings and "lessons learned" are described in the following section.

ALTERNATIVE SERVICE DELIVERY MODELS

Lessons learned about alternative service delivery methods that were determined to be potentially applicable in Metropolitan Bakersfield included:

- Many transit agencies have experience with a variety of alternative delivery models in areas where demand for service is low and traditional fixed-route service is not cost-effective. Flexible services include general public dial-a-ride and flex routes or route deviation and subscription services for long distance commuters.
- Sometimes transit agencies use flexible services as a way to expand (test) service into low density areas. Other times, agencies use flexible services as a way to maintain at least some level of transit service in areas currently served by poor performing traditional fixed-routes.
- Success with general public dial-a-ride and route-deviation has been somewhat mixed. In some cases, the services were eliminated or revised due to difficulties with scheduling, dispatching and other operational issues. Educating the public about these services has

also been somewhat challenging and requires considerable attention especially prior to service start-up.

- It is common for transit agencies to have a demonstration or trial period in which to closely monitor and evaluate these new services to determine if they are meeting pre-established standards. A typical timeframe for a new service to mature and realize its potential can range from 18 months up to three years.
- Funding programs such as Congestion Mitigation and Air Quality Improvement (CMAQ) and Job Access and Reverse Commute (JARC) help "jump start" experimental services such as these as well as public/private partnerships especially for subscription service focused on employee commutes.
- Subscription service may be an effective means of transportation to large employer cites or centers. Providing a fast direct service with limited stops from residential communities to major employment centers can demand higher premium fares. This type of service is designed for long distance commuters who have regular schedules similar to the existing Route X92—the Tejon Commerce Center Express.

The following guidelines were recommended for consideration of general public dial-a-ride service or route deviation:

- **Productivity.** For fixed-routes that carry less than 10 passengers per hour, consider alternative service models such as route deviation or general public dial-a-ride. For GET, this could mean existing Route 18 on weekdays and Routes 3, 6 and 18 on weekends when demand is lower. This could also include select routes after 7 p.m. and would require a more thorough evaluation of passenger loads during the evening hours.
- **Farebox Recovery Ratio.** The TDA requirement is 20% and GET has exceeded this standard for the last several years. For routes that drop below this ratio, they should be considered for an alternative type service.
- **Subsidy per Passenger.** This is another good quantitative performance measure. The system wide average is $2.00. The lowest subsidy per passenger is $1.04 on Routes 4 and 17 with the highest on Route 18 at over $4.00 per passenger. Routes that require a subsidy of more than $2.50 per passenger should be considered for a route deviation or possibly converted to general public dial-a-ride.
- **Population Density.** This is another quantitative measure that GET may want to consider for route deviation or general public dial-a-ride. The 2010 population density in the City of Bakersfield is 2,360 persons per square mile. Even though the population is expected to increase in the next 25 years, density will fluctuate due to variable patterns of development. GET should consider alternatives to fixed-route service in areas with densities of less than 2,500 persons per square mile.

HIGH CAPACITY TRANSIT/QUALITY BUS SERVICE

Bus Rapid Transit

Figure 3-1 Bus Rapid Transit in Eugene, Oregon

A number of lessons relevant to the future of Bus Rapid Transit, or BRT, in Metropolitan Bakersfield were identified:

- First, even relatively modest "rapid bus" projects can significantly improve performance and attract new riders while improving service for existing passengers. Depending on the level of investment in stops, a rapid bus project in Bakersfield might cost as little as a few hundred thousand dollars per mile to implement. Such low-cost implementations are also low-impact in terms of construction intensity and duration, as well as their effects on traffic and parking. They do not require dedicated lanes or island platforms in the center of the street, which typically require removal of curbside parking spaces.
- Second, BRT can be relatively cost-effective not just to build, but operate. Transit economics are, in essence, fairly simple: faster service is cheaper service. This is because fewer vehicles and thus fewer drivers are required to provide the same frequency (or, conversely, better frequency can be provided with the same number of vehicles). If, for example, 10-minute service is provided on a route that takes a bus or train 60 minutes to traverse, then six vehicles are required; but if the trip can be made in 50 minutes, then only five are required and thus fewer drivers. In practice, BRT lines often cost more to operate than the local bus lines they replace, but this is because they run more frequently

– and this higher frequency, in turns, helps to attract more riders, reducing costs per passenger.

- Third, BRT lends itself to both "mixed" and phased implementations. Even a "full" BRT line might not feature bus-only lanes for its entire length, and incremental improvements to right-of-way (such as queue jump lanes) and stops (such as ticket vending machines) can be used to convert a "rapid" line to a "BRT" line over time, as funding allows. A BRT line might even serve to "pave the way" for light rail – literally, as BRT can not only serve to build ridership, revenue and political support, but because elements common to BRT and rail, such as exclusive right-of-way and signal priority, would already exist.

A few important caveats should also be understood:

- First, for all of its advantages over rail, BRT is not "rubber-tired rail," and expectations should be realistic. BRT is unlikely to be as effective as rail in attracting riders, and in turn, will have less of an impact on traffic and emissions (buses themselves – even CNG buses – also generate more local emissions than electric LRVs). Depending on the level of investment in infrastructure, it is unlikely to have as much of an impact on development. Even the most comfortable buses cannot provide as comfortable a ride as steel-wheeled railcars, which don't suffer from bumps or lateral sway. And, depending on demand, rail may ultimately prove less expensive over the lifecycle of the capital investment.
- Second, "full" BRT projects can be nearly as costly as light rail, and can have similar impacts. San Francisco's planned Van Ness BRT project, which will convert the center lanes of a major arterial to a busway, is estimated to cost $59 million per mile.[1] Bus lanes and large stops, depending on availability of right-of-way, can have significant impacts on traffic and parking capacity, which in turn can impact retailers.

These cautionary notes notwithstanding, the apparent overall success of BRT implementations in Eugene, Oregon, Stockton and Los Angeles suggest that BRT is a strategy worthy of further exploration in future phases of the LRP.

Commuter Rail

A number of lessons about the future of rail transit in Metropolitan Bakersfield might be derived from the case studies and other research conducted for the *Best Practices Report*:

- First, while commuter rail can be relatively inexpensive to implement (at least compared to other types of rail), it can be relatively expensive to operate and maintain. Figure 3-2 shows average operating subsidies per boarding for select U.S. rail and bus lines based on research conducted for the case studies and the National Transit Database (NTD). Due to incomplete data, some figures are approximate, and data are from different time periods between 2006 and 2010 (in most cases, 2008). Nonetheless, the figure illustrates that while light rail trains are more expensive to operate than buses, their higher capacity enables them to be cost-competitive on a per-passenger basis. By contrast, traditional commuter trains, with their heavy, diesel-powered vehicles and crews of conductors in addition to operators, incur higher fuel and labor costs. Lightweight DMUs, with their similarities to light rail, are generally less expensive to operate than traditional commuter rail, although limited data are available. The one U.S. "heavy" DMU line, Portland's Westside Express Service, is relatively costly due in part to higher fuel costs associated

[1] Federal Transit Administration, Annual Report on Funding Recommendations, Fiscal Year 2010, 2009

with heavier vehicles, although the line remains relatively new and ridership has not yet met projections. In the final equation, the most important factor in cost-effectiveness is ridership: transit services in large urban areas generally require less subsidy.

Figure 3-2 Approximate Subsidy per Trip: Heavy Rail, Light Rail, BRT and Commuter Rail

Service	Service Type	Subsidy per Boarding
San Diego Trolley	Light Rail	$0.66
Los Angeles Metro Rail	Heavy Rail	$1.47
Los Angeles Metro Rapid	Rapid Bus	$1.80
Bakersfield GET	Local/Express Bus	$2.27
Sacramento RT Light Rail	Light Rail	$2.44
Los Angeles Metro Rail	Light Rail	$2.87
San Francisco-San Jose Caltrain	Commuter Rail (Locomotive)	$4.17
San Jose VTA Light Rail	Light Rail	$4.49
Los Angeles Metrolink	Commuter Rail (Locomotive)	$5.42
Oceanside-Escondido Sprinter	Commuter Rail (Light DMU)	$5.83
Baltimore-Washington MARC	Commuter Rail (Locomotive)	$7.72
Camden-Trenton River Line	Commuter Rail (Light DMU)	$7.77
Seattle Sounder	Commuter Rail (Locomotive)	$8.58
Stockton-San Jose ACE	Commuter Rail (Locomotive)	$8.88
Miami Tri-Rail	Commuter Rail (Locomotive)	$11.44
Albuquerque-Santa Fe Rail Runner Express	Commuter Rail (Locomotive)	$13.94
Portland WES	Commuter Rail (Heavy DMU)	$19.01
Nashville Music City Star	Commuter Rail (Locomotive)	$20.64

- Second, while DMU lines may be less expensive to build than light rail and potentially less expensive to operate than traditional commuter rail lines, they are significantly more expensive to implement and operate than buses. Based on available data, Sprinter's operating cost per hour in FY2009 appears to have been close to $700 (per train, not vehicle)[2]. This cost is offset by the service's high productivity. However, this figure is roughly ten times the amount GET pays per hour to operate its buses, and the total annual cost to operate Sprinter, approximately $15 million, would constitute more than two-thirds of GET's annual budget. Lightweight, less fuel-consuming DMUs also cannot legally operate on freight tracks unless freight movements are restricted to off-hours.

[2] Staff presentation at Passenger Rail Symposium, Long Beach, California, May 18, 2010

- Third, while its ability to use existing right-of-way helps make commuter rail an attractive option, conflicts with freight can have a significant impact on both vehicle selection and reliability. In addition to ACE, Amtrak's San Joaquin, serving Bakersfield, is regularly delayed by freight. According to Amtrak[3], in August 2010 the San Joaquin had relatively high on-time performance of 91.1%; however, Amtrak attributed nearly half of all delays to "train interference" caused primarily by freight trains.
- Fourth, caveats aside, commuter rail with its higher level of amenity can be expected to attract new transit users, and even when service is relatively infrequent, it can have an impact on land use patterns. A study by the noted transit researcher Robert Cervero[4] found that previous research into the relationship between property values and proximity to rail stations had been inconclusive; however, Cervero concluded from his research that:

  > *Rail transit services in the San Diego region have conferred land-value benefits to residential and commercial properties, though relationships vary considerably by land uses and corridors and instances of land-value discounts were found.*

  For commuter rail, Cervero found a significant premium for commercial property near the downtown San Diego Coaster station (91%) and smaller but nonetheless significant premiums for single-family housing and condominiums near non-downtown Coaster stations. However, he found negative effects for multifamily rental housing and for commercial property near non-downtown stations. This pattern is perhaps unsurprising given that "commuter rail lines often serve professional-class, home-owning workers," as Cervero explained. It should be noted that in planning for transit-oriented developments at commuter rail stations, planners must determine how much space within walking distance of stations should be used for parking rather than other uses, such as housing, offices and retail.
- Fifth, connectivity is key. Commuter rail lines need not necessarily directly serve large, dense central business districts, and some newer lines operate exclusively within suburbs. However, operators of lines primarily serving suburban jobsites typically need to provide supplemental shuttle service at destination stations in addition to any existing local transit routes. The most cost-effective of the commuter rail providers included in Figure 3-2, the Bay Area's Caltrain, serves downtown San Francisco and San Jose. However, the vast majority of its stations are in suburban areas, including parts of Silicon Valley, and like ACE, it relies on an extensive network of private and public shuttles, most of which are free to use.

In conclusion, the potentially high cost of providing commuter rail service suggests that any planning efforts related to such service must comprehensively and realistically address funding and implementation issues.

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3 Amtrak webpage: http://www.amtrak.com/servlet/ContentServer?overrideDefaultTemplate=OTPPageVerticalRouteOverview&c=AM_Route_C&mode=perf&pagename=am%2FLayout&cid=1241245650084

4 Effects of Light and Commuter Rail on Land Prices: Experiences in San Diego County, Robert Cervero, University of California, Berkeley, 2003.

UNIVERSITY AND TRANSIT AGENCY PARTNERSHIPS

Partnerships between public transit providers and universities and colleges are beneficial to both parties, as they serve to increase transit ridership and revenue at the same time students, faculty, and staff are offered transit service at a discounted fare. Universities also benefit from reduced congestion, reduced demand for limited parking space, and lower emissions.

Entering into formal written agreements is an effective method of structuring these partnerships in order to ensure that the transit agency is receiving its "fair share" of revenue, and that all those affiliated with the university are receiving quality service at a reasonable rate. Such agreements provide direct financial support to transit agencies, and research indicates both that "agencies that serve major universities tend to have significantly higher per capita ridership figures than do other comparably sized areas" and that the specific routes serving a campus are often the most heavily patronized.[5]

The most common arrangement identified in the case studies is one in which students, faculty, and staff are able to board public transit buses free of charge, after either presenting a valid university ID card to a driver or swiping it though a farebox. The university is then either invoiced directly by the transit agency based on the number of boardings, or makes an annual payment to the transit agency based on multi-year ridership averages. To cover costs incurred by the university, a student transit fee is charged as part of regular tuition or other fees.

In addition to encouraging and subsidizing transit use for their students, faculty, and staff, many agencies are now taking a multimodal approach to campus mobility. All three institutions studied had as a goal a shift in mode share from single-occupant vehicle trips to other modes including not just transit but walking, biking, carpooling, and employee shuttle trips. To support these transportation demand management (TDM) measures, the three case study universities are actively promoting alternative transportation services and facilitating programs such as preferential carpool and vanpool parking policies, Guaranteed Ride Home services, ride matching services, and enhanced infrastructure to accommodate pedestrian and bicycle travel in and around campus areas.

5 TCRP Report 111 *TranSystems et al.* 2007

4 OUTREACH

This chapter reviews the public involvement activities conducted throughout the planning process. It began with preparation of a Public Involvement Plan that guided the outreach process to ensure that feedback and comments were solicited at key milestones in the development of this Long-Range Plan.

As a first step, the consulting team created a "Tag Line" for the Metropolitan Bakersfield Long-Range Transit Plan. The purpose of the "Tag Line" was to have s an effective logo and a brief statement to grab the public's attention and communicate the purpose of the planning process. The selected logo and "tag line" is:

The Public Involvement Plan consisted of several venues to engage as many people as possible to understand the opinions and attitudes of a diverse set of stakeholders. The specific outreach activities included stakeholder interviews, informal operator meetings, roundtable discussions, a planning game exercise, and a series of public outreach events including a short survey.

STAKEHOLDER INTERVIEWS

One-on-One Interviews

In a series of one-on-one interviews conducted by Nelson\Nygaard staff in early 2010, more than two dozen community leaders, public agency staff and policy board members identified by GET District and Kern COG staff as important representatives of community opinion were asked about their perceptions of public transportation in Metropolitan Bakersfield. They offered opinions on a range of related subjects; interestingly, however, the diversity of opinion expressed was not that great, which is to say that there was a surprising amount of consensus on many issues. Key findings included:

- Transit is simply not as convenient as driving in Bakersfield, and as a result, those with choices (access to private autos) typically don't use transit.

- Transit is not as convenient as driving primarily because transit takes more time.
- Several suggested ways they thought service might be made more convenient, comfortable, and cost-effective including new express bus routes for commuters, creative solutions to provide better coverage to outlying areas where existing bus service is infrequent or nonexistent, enhanced amenities at bus stops, more service focused on college students, and improvements to paratransit service.
- Despite the limitations of existing service, most of those interviewed expressed support for public transit as a concept and for GET as an organization, recognizing the health, environmental, and equity benefits it offers and its important role in the community.
- At the same time, there is a great deal of skepticism that Bakersfield will ever be a more urban and transit-oriented community. There is widespread agreement that Bakersfield's relatively low-density, auto-oriented patterns of development are a reflection of the community's preferences, and that too much regulation can be counterproductive.
- Planning staff from agencies other than GET believe it might be possible to make future developments more transit-supportive using incentives, and that GET staff could be more proactive in working with other agencies and directly with developers.
- There is a great deal of skepticism that voters would approve any significant tax increase for transit, and that expensive investments such as light rail transit could be justified on a cost-benefit basis in the future. (However, some believe more urban forms of transit might eventually make sense).
- Finally, there is a great deal of uncertainty about the possible impact of high-speed rail if it is built.

Many of the themes that emerged from conversations with stakeholders proved useful in framing the remainder of the LRP process. Foremost among these was a desire or "need for speed": changes to make public transit faster, stakeholders repeatedly said, could benefit both existing and possible future riders (although as was noted in Chapter 2, Existing Conditions, in reality a lack of major job centers limits the number of opportunities available for new express services). Bakersfield is, as multiple commenters noted, something of an autopia — even without freeways on the west side of the city, it remains relatively easy to both drive and park, and the only way transit can effectively compete in such an environment is to focus on speed. Commenters likewise generally agreed that developing a built environment more conducive to transit will be challenging and may not necessarily be desirable. Most recognized the benefits of both transit and more compact development, but at the same time, they noted that Bakersfield's historic appeal has rested in the "elbow room" it affords at relatively low cost. Several commenters agreed, however, that greater density need not be an all-or-nothing, either/or choice between poles (e.g., homes on half-acre lots or condominium towers); instead, modest increases in density in select locations could help to make transit service more cost-effective. Moreover, there is more to transit-oriented design than density: other elements, such as a greater mixture of uses and design to facilitate walking and biking, might prove desirable to a majority of the population.

In general, commenters seem to hold GET, KRT, and other transit providers in high regard. The value of transit to the community is well understood. However, commenters repeatedly emphasized cost-effectiveness and expressed skepticism that voters would approve any significant tax increase to fund expansion of transit services.

"SMITHVILLE" PLANNING GAME

On October 7, 2010, Nelson\Nygaard and GET staff staged a session of Nelson\Nygaard's "Smithville" Transit Planning Game© at the GET District offices.

In the Game, participants are invited to "play" transit service planner for a few hours. Its objectives are twofold: to simulate for attendees the difficult trade-offs real-world service planners must often make given limited financial resources; and to learn the invited participants' priorities in terms of service design objectives, strategies, and allocation of resources. The objectives were used in development of the Service Plans found in the following chapter.

More than 20 people took part in the Game, including members of the GET Board of Directors (the session was held concurrently with a special GET Board meeting), GET staff, staff from Kern COG and other City and County agencies, and representatives from a nonprofit social service provider and a private company. Participants were divided into four groups, each with a facilitator, and were asked to design route networks using maps of Bakersfield and "bus days" representing limited resources.

Figure 4-1 "Smithville" Transit Planning Game© in action at GET District offices

The Game process is further described in an October 18, 2011 memorandum from Nelson\Nygaard to GET and Kern COG staff. Results are summarized below.

Common Themes

In essence, the Planning Game is a priority-setting exercise, and when multiple participants – representing a cross-section of stakeholders -- express the same priorities, either directly through their stated objectives or indirectly through the conceptual route networks they develop, it can offer useful insights into the community's priorities.

Over the course of the GET planning game, a few major themes emerged:

- **High-frequency service in trunk corridors**. All four groups developed routes that would provide service every 15 minutes or more frequently. A 20-minute headway – the most frequent service currently offered by GET – was not provided as an option in the game, and a few participants stated a preference for 20-minute service over more expensive 15-minute service. Nonetheless, there was broad agreement that relatively frequent service should be offered in several corridors, in some cases many more than today (GET currently provides 20-minute service on Routes 2, 4 and 5). Two groups drew Bus Rapid Transit routes providing service every 7.5 minutes to limited stops, one north-south along Chester Avenue and the other east-west along Stockdale Highway and Brundage Lane. By contrast, very few 60- or 120-minute routes were drawn, although this might be partly a result of process: most groups ran out of time before allocating their entire budgets, and began, naturally, by focusing on higher-demand corridors. It should be noted as well that one of the groups drew a network consisting almost entirely of 30-minute service. If GET were to provide more frequent service in more corridors, service would either have to be reduced in other areas, or additional funding would have to be found.
- **Less emphasis on transit centers.** While two of the four groups developed route networks with a radial focus on downtown, the other two drew "grid" systems consisting largely of crosstown routes intersecting at various points outside of downtown. There was even less focus on the Southwest Transit Center, although adjacent Valley Plaza remained a major destination. The two groups that focused on downtown had fewer routes connect there, although again, this may have been partly because time expired before they were able to allocate their entire budgets.
- **More direct routes.** While groups were divided between a preference for indirect routes serving a series of major destinations and faster, more direct routes remaining along major arterials, there were far fewer "spur" deviations and one-way loops than in the existing GET route network.
- **Fast, frequent service to Bakersfield College and CSU Bakersfield.** After downtown and Valley Plaza, these were the two most-served destinations, and three of the four groups identified students as a key market. GET currently provides a high level of service to Bakersfield College (indeed, a third transit center is planned there), but relatively limited service to CSUB and the adjacent State Farm offices and Marketplace shopping center. Nonetheless, a consensus appeared to exist that service to CSUB should be increased: all four groups connected it to routes operating every 15 minutes during peak periods, and two of the four provided 15-minute all-day service. One group extended the existing Route 17 to provide all-day express service between the two campuses.
- **Nontraditional services in outlying areas.** The current GET system provides a relatively high degree of coverage to outlying areas, albeit with relatively infrequent service in most cases. A number of fixed routes take circuitous paths through newer, primarily residential areas. Three of the four groups, however, chose to provide demand-responsive general-public dial-a-ride service in such areas, particularly in Northwest and Southwest Bakersfield. Such service would, in some ways, be an improvement over existing service, as riders could be picked up at their homes or nearby pick-up points. However, advance reservations would be required, and travel times could be slower because of the shared ride nature of dial-a-ride service. Moreover, even on GET's least productive routes, there are currently more boardings per hour of service than can typically be found on dial-a-ride services. Interestingly, none of the groups exercised the

option to provide deviated fixed-route or "flex" service under which operators could deviate off of their routes, within a maximum distance, on request; however, this may have, again, been partly a result of process, as flex routes are somewhat more expensive to operate than fixed routes and don't provide the broad coverage of dial-a-ride zones, which in the game served areas of 12 square miles apiece.

- **Service to rural destinations.** While one group expressly stated that service to points outside of the Bakersfield Metropolitan Area should be the province of Kern Regional Transit and not GET, two groups developed new routes to major employment and other sites in rural Kern County. Notably, however, little interest was shown in more traditional commuter express services providing connections between suburban areas and downtown or other major job centers within Bakersfield.
- **No need for late-night service.** Finally, while under the rules of the game all-day service was assumed to operate until 11 p.m., the current time at which major GET routes cease to operate, participants were offered the option of providing service on some routes until 1 a.m. None, however, exercised that option.

ROUNDTABLE MEETINGS

At two important times in the planning process, roundtable meetings were held with key stakeholders. The first set of meetings was held in April 2010 to introduce the project, and solicit feedback on transit needs and short and longer-term priorities. The meetings were structured to get input from four separate stakeholder groups consistent with the categories used in the outreach process for developing the Kern Regional Blueprint: Environmental and Social Equity, Planners, and Business and Industry. A fourth group focused on Education and included representatives of colleges and public schools. The themes that emerged were very similar to the opinions and preferences expressed by the one-on-one stakeholder interviews. A summary of the themes are presented below:

- Faster and express service is needed especially for college students (CSUB and Bakersfield College) and for commuters to attract "choice" riders to transit (potentially including new express bus routes).
- To support express service and provide linkages with outlying areas, more Park N Ride facilities are needed especially in the longer-term.
- Better access to transit is desirable in fast-growing, outlying areas such as southwest and northeast Bakersfield.
- To support transit and increase its effectiveness, better land use planning is needed with higher density and infill development. Low density suburban development may not be well served by transit.
- While several stakeholders commented on the attractiveness of the new GET buses as good advertising for the service, the desire for more transit information was a dominant theme including "real time" information, kiosks, Google Transit and way-finding.
- Many stakeholders felt that more passengers are needed to make transit more desirable and comfortable. More shelters, benches and other amenities should be provided at bus stops.
- Late night service is needed especially for college students who attend evening classes.

In March 2011, a second set of meetings were held to present the major findings from the *Existing Conditions Report* and to share the draft short-term, midterm and long-term service plans. The

focus of the discussion was on the proposed short-term changes to GET routes. There was support for the proposed new service especially considerable interest and support for the higher frequent service and the BRT service in downtown Bakersfield.

OPERATOR INTERVIEWS

Informal interviews with GET operators were conducted April 26, 2010 in the breakroom at GET offices. Drivers are in a unique position to provide useful information about the operational efficiency of individual routes and the system as a whole. They can also offer insight into potential areas for expansion and other opportunities for improvement.

GET drivers commented on existing routes, planning considerations, and potential for new services. Comments on individual routes can be found in the *Existing Conditions Report*. Comments relevant to design of future are repeated here.

Planning Considerations

- Routes through the Wal-Mart parking lot at Northwest Promenade should be altered slightly. Drivers commented that new buses often bottom-out in certain sections of the lot, and that pedestrian access to stops is challenging and unsafe.
- Weekend service should be increased, especially in the summer when evening ridership is higher.
- Timepoints on major streets with high volumes of traffic have inaccurate schedules that frustrate riders.
- Signage at stops should be made clearer and more distinct from other, nearby streets signs, for the sake of both riders as well as operators.
- Different alignments for inbound and outbound trips on a route are confusing to riders.
- Crosstown routes are too slow. Drivers suggested new express routes along Gosford Road, Union Avenue, Stockdale Highway, and Brundage Lane.
- Many stops, including some in the downtown area, are not adjacent to curbside "red zones," meaning that riders must enter and exit buses between parked cars. This is particularly problematic for disabled riders.

Areas for Expansion of Service

Operators recommended expansion of service into several new areas. These included:

- West, past Allen Road, to accommodate new parks, housing, and the Mercy Southwest Hospital
- To the south and west of White Lane (currently served by Route 7)
- Southeast along Fairfax Road (near Fairfax Middle School) and Weedpatch Highway to serve the carrot factory and other major employers
- The far Northeast, near Lake Isabella

PUBLIC OUTREACH

Public outreach consisted of several forums and venues to engage as many people as possible and to understand the opinions and attitudes of both existing transit riders and non-riders. The dates and locations of the various forums are summarized in Figure 4-2 below. The three outreach

activities in the fall of 2010 were intended to get the word out about the study and to engage the public about the study process and expected outcome. The primary purpose of the outreach activities in the fall of 2011 was to solicit feedback on the short-term service plan.

Figure 4-2 Public Outreach Events

Date	Type of Outreach	Target Audience	Approximate No. of Attendees
September 2010	Kern County Fair	General Public	600
September 2010	Bakersfield College	College students	400
September 2010	CSUB	College students	350
September 2011	Kern County Fair	General Public	500
September 2011	Bakersfield College	College students	85+
October 2011	GET Transit Centers	Transit Riders	160+
November 2011	CSUB	College students	30

A short survey was distributed at these outreach events. The survey was designed to solicit reaction to the short-term service plan. A total of 486 surveys were completed in the fall of 2011. Figure 4-3 shows the total number of surveys completed from each outreach event.

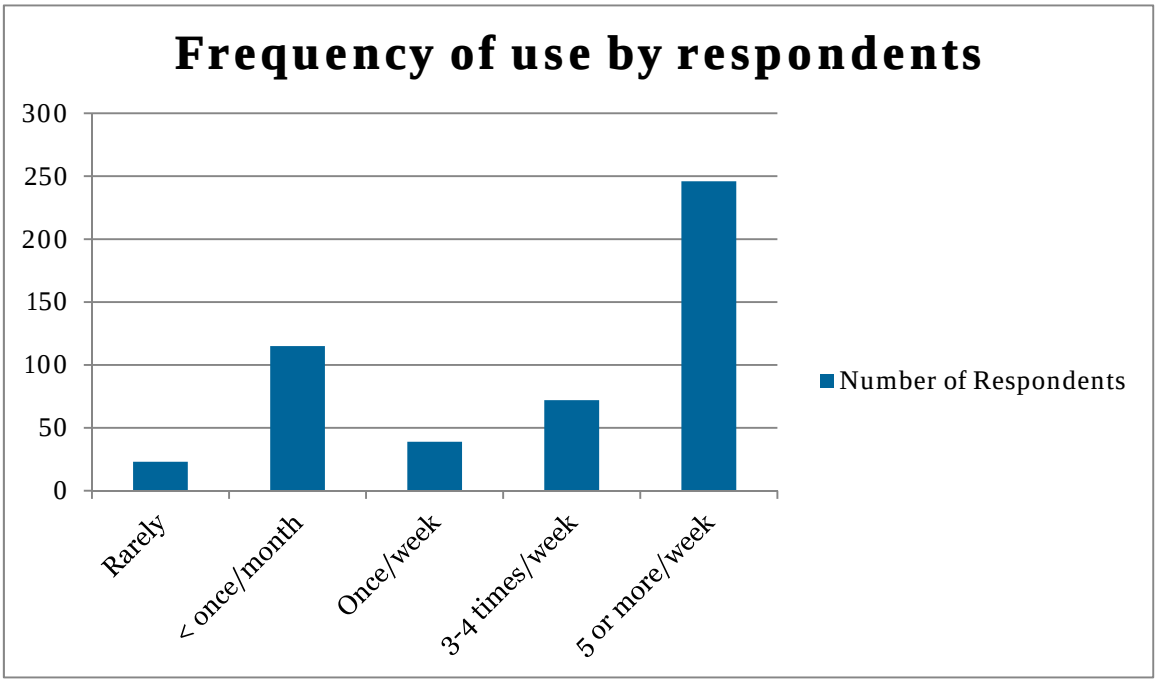
Figure 4-3 Completed Surveys

	Surveys
Kern County Fair	214
Bakersfield College	83
Transit Centers	15
CSUB	30
Total	486

Note: Not all respondents answered all questions.

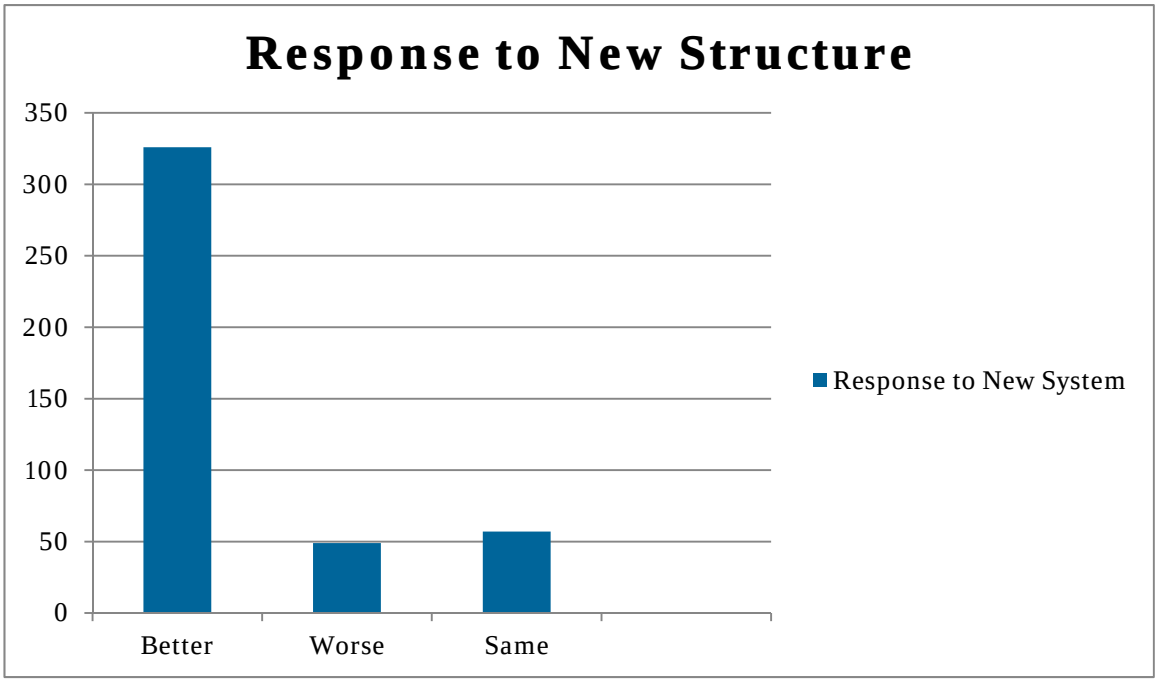
A total of 406 respondents stated they currently ride GET on a regular basis. Of the transit riders, a majority uses the service five or more days per week as shown in Figure 4-4 below.

Figure 4-4 Frequency of Use by Respondents



Overall reaction to the system was very positive, as shown in Figure 4-5 below. Of the 432 responses, 326 or three-quarters of respondents commented that the new route structure seems better than the current one and will improve service. Fifty-seven respondents or 31% felt that the new system was not much better than the current system, and 11% expressed concern that the new structure may be inferior to the current one.

Figure 4-5 Response to New Structure



5 SERVICE PLANS

This chapter describes the recommended Short-, Midterm and Long-Term Service Plans. The recommended plans were developed by Nelson\Nygaard in collaboration with GET District and Kern COG staff. The developmental process was an iterative one, consisting of multiple rounds of review and revision, and the recommended plans include many refinements of the draft plans developed in early 2011.

The plans conform to the following financial scenarios jointly developed by consultants and staff:

- **Short-Term (2013-2020).** Operate no more than 280,000 annual hours of revenue service, a slight reduction from the current (2011) service levels.
- **Midterm (2021-2025).** Operate no more than 360,000 annual revenue hours (this scenario assumes passage of a sales tax or other revenue-generating measure; in the absence of additional funding, continuation of the Short-Term Plan is assumed).
- **Long-Term (2026-2035).** No financial constraints.

Financial plans can be found in the following chapter. A strategy for implementation is located in the conclusion of this report.

For each time period, it is assumed that GET will continue to operate the required level of Americans with Disabilities Act (ADA) complementary paratransit service within its service area and that there will be no significant changes to the service delivery model. The Service Plans, then, are focused on fixed-route service, primarily that operated within Metropolitan Bakersfield by GET (some changes to Kern Regional Transit service are included in the Midterm and Long-Term Plans and additional study of connections between KRT and GET in the Short-Term is now planned as part of a separate process).

SERVICE PLANS GUIDELINES

Each Service Plan was developed based on findings from the Existing Conditions (Chapter 2), Best Practices (Chapter 3), and Outreach (Chapter 4), as well as guidelines developed by the GET District Board of Directors and general fixed-route transit planning principles.

GET Vision Statement and Planning Guidelines

In December 2010, acting on draft recommendations from Nelson\Nygaard, the GET Board of Directors adopted the following Vision Statement:

> *"GET...doing our part to improve mobility and create livable communities by becoming every household's second car."*

In addition to the Vision Statement, the Board also adopted a number of Planning Guidelines:

- Services should be designed in a manner which maximizes the seamless connectivity between all routes, modes and systems. In this context seamless means that the

passenger should not be discouraged from making a trip because of perceived barriers related to: 1) physical connections, 2) timed transfers, 3) fare payment, or 4) information services.

- The system-wide transit operating speed (as measured by total Annual Revenue Miles divided by Total Annual Revenue Hours) should increase each year or at the very least should never drop below the 2010 baseline.
- Transit service should be designed in a manner that allows it to have a meaningful impact on regional air quality and support achievement toward greenhouse gas-reduction targets.
- Transit should be designed in a manner that supports healthy lifestyles by fostering a pedestrian and bicycle - friendly environment.
- Transit service should be financially sustainable over all time periods.
- Transit planning should be conducted in collaboration with cities and the County in order to integrate transit and land use planning decisions.

General Transit Planning Principles

In addition to the GET Board Guidelines, a number of general fixed-route transit planning "best practices" were applied in development of the Service Plans:

- Service productivity (cost-effectiveness) and coverage must be balanced in a way that reflects local values.
- Devote a fair share of resources to corridors featuring transit-supportive land use and demographic patterns.
- Whenever possible, routes should have trip-generating "anchors" at both ends.
- Routes should be as direct as possible.
- Spacing between stops should be maximized so that door-to-door travel times are minimized (while acknowledging the needs of persons with mobility challenges).
- Connectivity between routes should be as seamless as possible
- Avoid creating large one-way loops.
- Avoid requiring out-of-direction travel, especially in the middle of routes.

SHORT-TERM SERVICE PLAN (2013-2020)

Land use and demographic context was briefly described in Chapter 2 of this report, Existing Conditions. However, additional summary of land use and demographic conditions in different parts of Metropolitan Bakersfield may provide some additional context for the Short-Term Service Plan:

- Newer areas of development west of Highway 99 are generally less supportive of transit service than older areas to the east: much of the development on Bakersfield's west side consists of "strip" and "power center" retail and middle- to upper-income single-family housing tracts. There are, however, a few pockets that offer greater ridership potential, including the Cal State University, Bakersfield area (which in addition to the campus, includes several large office complexes), the California Avenue office corridor and pockets of multifamily residential.

- The older and lower-income central, eastern and southeastern sides of the city, as well as parts of Oildale, remain an attractive market for transit service, both in terms of (mixed, somewhat denser) land uses and (more transit-dependent) demographics.
- Northeast Bakersfield is something of a mixture; while much of the area is relatively affluent, it also includes Bakersfield College and the East Hills Mall area.

The Short-Term Service Plan responds to these conditions by providing the highest levels of transit service where demand for that service is likely to be highest, including currently underserved markets such as CSU Bakersfield. However, it also seeks to attract new transit riders by providing faster Bus Rapid Transit and express services. Alternative service delivery models identified in Chapters 2 and 3 including route deviation and general public demand-responsive service ("dial-a-ride") were considered, but were not ultimately carried forward due to existing demand in outlying areas deemed to be sufficient to support fixed-route service, if relatively infrequent service. (The "Circulator/Express" service type described under "Categories of Service" was developed instead to serve areas such as Northwest Bakersfield.)

Prominent features of the Short-Term Service Plan include:

- **A decreased emphasis on timed connections at transit centers.** Both the Downtown and Southwest Transit Centers are effectively operating beyond their designed capacity. The Southwest Transit Center is an operational "bottleneck" due to physical constraints of its site, while the Downtown Transit Center can accommodate all currently scheduled GET service, but requires Kern Regional Transit (KRT) buses to stop on the street. The Midterm and Long-Term Service Plans take advantage of Bakersfield's regular grid of evenly spaced arterials to introduce a "grid" service model; however, gridded systems rely on high frequencies (as transfers between lines cannot be timed, as they can in a "radial" system such as the existing GET network), and the limited number of annual service hours available in the Short-Term (280,000) precludes a grid system with acceptable geographic coverage. Nonetheless, the recommended Short-Term Service Plan would reduce GET's reliance on "pulse" timed transfers at the existing transit centers by introducing several routes bypassing transit centers, making the Short-Term network a "hybrid" of a radial and grid system.
- **A new transit center at CSU Bakersfield.** While the importance of the existing transit centers would be reduced somewhat, a third transit center is under construction at Bakersfield College, and this plan proposes a fourth, at CSU Bakersfield. CSUB is not only a major destination, but is geographically well-positioned to serve as a transit hub for both Southwest and Northwest Bakersfield. A Technical Memorandum identifying a location and conceptual design for this facility was submitted to GET staff as part of the LRP process (and is included as Appendix B), and discussions are underway between GET and CSUB representatives.
- **Increased service to CSU Bakersfield and Bakersfield College.** College students are an attractive market for transit service: they tend to have limited incomes, they may be more willing than other groups to take transit for other, cultural reasons, and campuses are major destinations. Bakersfield College is relatively well served by the existing GET route network; however, CSUB is not. The Short-Term Service Plan would increase service to BC, and would greatly increase service to CSUB, including a new transit center and two Rapid lines.

- **Faster crosstown trips[6].** Bakersfield's grid of broad arterials, some with speed limits as high as 55 miles per hour, makes it possible for motorists to drive across town (including time spent stopped at signals) at average speeds of more than 25 miles per hour. By contrast, average speeds on GET's local routes range from 8.8 to 17.3 miles per hour. These slow transit speeds, combined with indirect routes, make transit non-competitive with the auto for most trips within the metro area. In the Short-Term Service Plan, several strategies are used to increase overall transit operating speeds:
  - *New Express routes.*
  - *New "Rapid" routes making only limited stops (described in the next section, service categories).*
  - *More direct routes.*
  - *Wider spacing of stops.* A new standard of one-sixth to one-quarter of a mile on crosstown routes, and one-quarter to one-third of a mile on community circulators is recommended (note that for cost reasons, it may be desirable to continue using existing stops that are more closely spaced than the standard if removal would result in gaps longer than the standard; note, also, that any new stops should be located on the far sides of intersections to reduce delay).
- **A less confusing system.** The existing GET route network provides broad coverage. In order to do so, however, directness and simplicity are compromised. More direct alignments are one way to make transit service easier to understand; another is to group lines into categories of service. The next section, Service Categories, describes the proposed categories. Routes in each category would operate at the same frequencies, during the same hours, and would have similar stop spacing. Furthermore, all lines would operate on simple "clockface" headways of 15, 30 or 60 minutes. Route numbering would be based on category, and maps might use line color and thickness to identify categories.

The Short-Term Service Plan represents a significant reconfiguration of service. While all high-demand corridors and destinations currently served would continue to be served (and indeed, some proposed lines are similar to existing lines), some areas of lower transit demand would experience a reduction or elimination of service.

Some capital investments would be required, including the new CSUB Transit Center and Rapid stops with enhanced amenities. Costs for these facilities are described in the following chapter. The Plan assumes interim routings until capital projects including a bus bay on Truxtun Avenue at Commercial Way and a new south exit at the Southwest Transit Center can be completed. It is assumed that temporary bus stops could be provided at the location of the CSUB Transit Center (at Kroll Way and Don Hart Drive East) until that facility is completed; if not, routes could continue to use the existing stops at the end of Don Hart Drive West.

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6 In order to develop the Short-Term Service Plan, Nelson\Nygaard staff "test drove" proposed routes (mimicking "bus behavior" by remaining in curb lanes and slowly accelerating and decelerating). Dwell (loading and unloading) factors were then applied to calculate average travel times. The resulting average speeds were significantly higher than for existing GET service – in most cases, 15 to 20 miles per hour, including stops. In most cases, service could operate somewhat more slowly than is envisioned here without increasing operating costs. However, in a few cases a reduction in speed would increase costs. GET staff are currently conducting further analysis to determine ultimate feasibility and cost.

Categories of Service

Rapid (Routes 1 & 2)

Rapid service – a precursor to the Bus Rapid Transit service to be introduced in the Midterm -- would be designed to be fast, frequent, and direct. Buses would make only limited stops, about two-thirds of a mile apart on average, and would operate every 15 minutes from 6 a.m. to 11 p.m. on weekdays and 7 a.m. to 7 p.m. weekends.

The two Rapid lines would form the “spine” of the new system. They would offer fast crosstown trips along GET's busiest corridors, and would connect to every other line in the system.

At launch, each Rapid stop should be distinct from GET’s regular stops, both in terms of amenity and appearance, with shelters, custom signage and line maps. All buses and signs should be distinctly "branded" with a Rapid service logo.

In the Midterm, “full” Bus Rapid Transit service would be introduced. In the Short-Term, speed improvements would derive primarily from longer distances between stops, transit signal priority (TSP), “queue jump” bus-only bypass lanes at busy intersections, “side-running” transit lanes where possible, and level, prepaid, and all-door boarding at busy stops (using high platforms and ticket vending machines). Wide stop spacing and TSP in the downtown area would be in place at launch; other measures could be phased in, incrementally, over the Short-Term.

Crosstown (Routes 10-16)

Crosstown service would operate relatively frequently, every 30 minutes from 6 a.m. to 7 p.m. on weekdays and 7 a.m. to 7 p.m. weekends, and every 60 minutes from 7 p.m. to 11 p.m. weekdays. Stops would generally be about one-sixth to one-quarter of a mile apart (850 to 1,300 feet).

As the name suggests, crosstown lines would connect one side of Bakersfield to the other, generally through downtown Bakersfield.

Circulator (Routes 21-22)

Circulator services would operate every 60 minutes from 6 a.m. to 7 p.m. on weekdays and between 7 a.m. to 7 p.m. on weekends. Stops would generally be about one-quarter of a mile apart; however, stop spacing within neighborhoods should be adjusted as needed to reflect access patterns.

Circulator lines, as their name implies, would either provide service within neighborhoods (Route 22) or around outlying areas of Bakersfield (Route 21).

Express (Routes 117 and X92)

Route 117, a continuation of the existing Route 17, would operate relatively frequently, every 30 minutes from 6 a.m. to 7 p.m. on weekdays and 7 a.m. to 7 p.m. weekends, and every 60 minutes from 7 p.m. to 11 p.m. weekdays. It would continue to stop only at Bakersfield College, the Downtown Transit Center, and the Southwest Transit Center, operating on Highways 99 and 178.

Route X92, the existing commuter-oriented Tejon Ranch express service partly funded by Tejon Ranch management, would remain as is.

Circulator/Express (Routes 121-123)

Circulator/Express service will operate every 60 minutes from 6 a.m. to 7 p.m. on weekdays and 7 a.m. to 7 p.m. weekends. Stops will generally be about one-quarter to one-third of a mile apart (1,300 to 1,750 feet) in Circulator segments, and only at major destinations in Express segments.

As the name suggests, Circulator/Express service is a hybrid of Circulator and Express service, circulating within outlying neighborhoods before operating as express service between those neighborhoods and the Downtown Transit Center.

Please refer to Appendix C for identification of additional service priorities for the Short-Term Service Plan if additional funding becomes available. Appendix C also recommends productivity standards for each of the service categories identified in the Short-Term Service Plan.

Routes

Figure 5-1 illustrates the recommended route alignments. While it does not show the existing Route X92, it is envisioned that this service would continue as long as some private funding is provided.

Figure 5-2 shows estimated round-trip "cycle" times (including layover at the end of each trip), headways, resulting numbers of vehicles required during different time periods, and revenue hours required for operation.

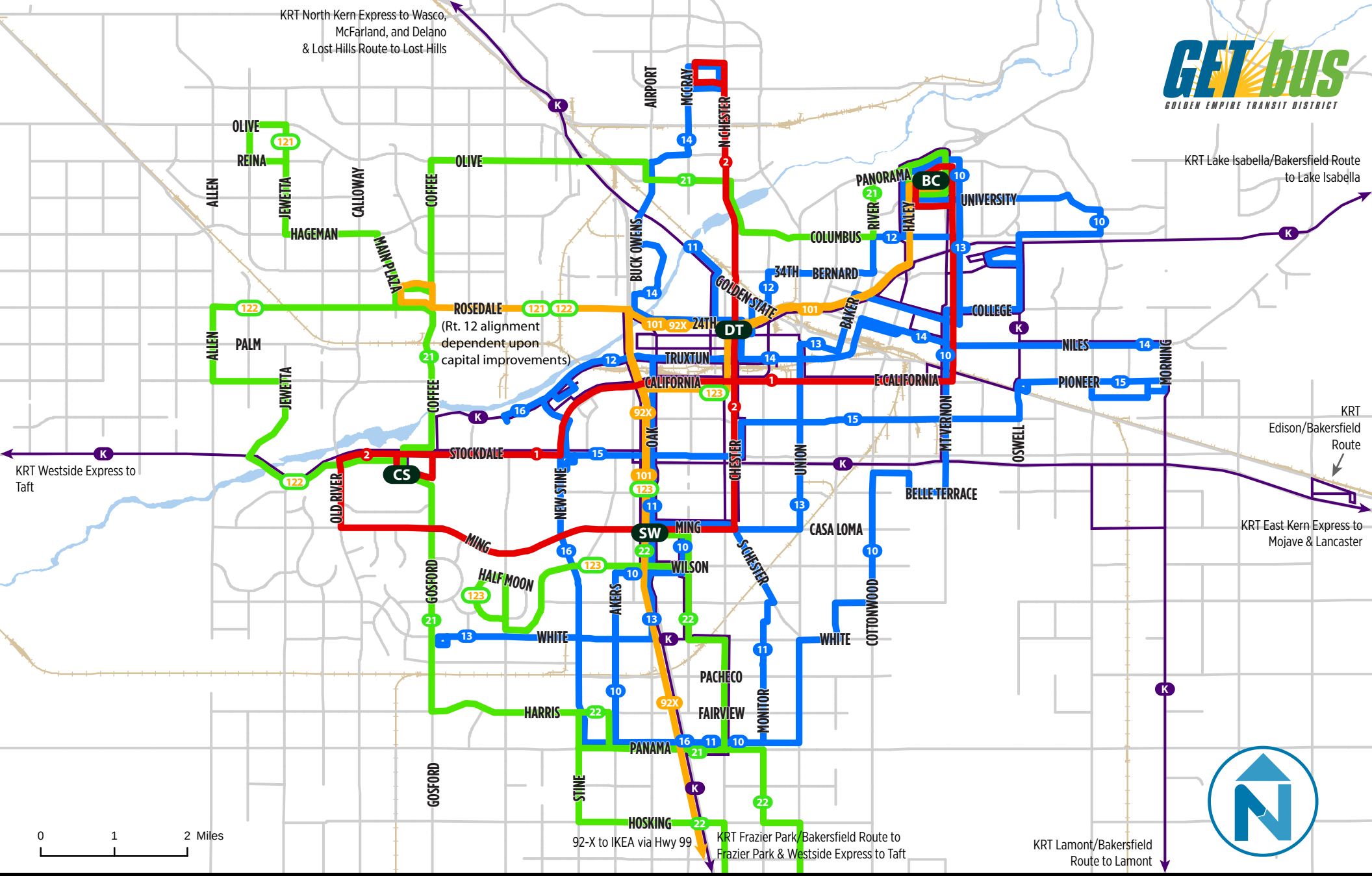

FIGURE 5-1: MAP OF PROPOSED GET FIXED-ROUTE (SHORT-TERM)

GET Routes

2 Rapid
Mon-Fri 6am-11pm
Sat-Sun 7am-7pm
every **15** minutes

101 Express
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **30** minutes

Mon-Fri 7-11pm
every **60** minutes

21 Circulator
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **60** minutes
No evening service

13 Crosstown
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **30** minutes

Mon-Fri 7-11pm
every **60** minutes

123 Circulator Express
Mon-Fri 6am-7pm
Sat-Sun 7am-7pm
every **60** minutes
No evening service

Transit Centers
- DT Downtown
- SW Southwest
- BC Bakersfield College
- CS CSU Bakersfield

KRT Routes
- K Kern Regional Transit

Data Sources: Kern COG, City of Bakersfield GIS

Figure 5-2 Calculation of Revenue Hours (Short-Term)

	WEEKDAY																					WEEKEND																			
	RND TRIP TIME excluding recovery				RND TRIP TIME including recovery				FREQUENCY				VEHICLES				HRS/WEEKDAY				WKDAY REV HRS	RND TRIP TIME excluding recovery			RND TRIP TIME including recovery			FREQUENCY			VEHICLES			HRS/WKEND DAY			Wkend day REV HRS	Weekday Rev. Hours	Weekend Rev. Hours	Total Calc. Rev. Hours
Route	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt		Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve				
1		69	62			76	68			15	15		0	6	5	0		13.0	4.0		98		69		0	76	0		15		0	6	0		12.0		72	25,015	7,920	32,935
2		98	88			108	97			15	15		0	8	7	0		13.0	4.0		132		98		0	108	0		15		0	8	0		12.0		96	33,693	10,560	44,253
10		154	139			169	152			30	60		0	6	3	0		13.0	4.0		90		154		0	169	0		30		0	6	0		12.0		72	22,973	7,920	30,893
11		84	76			92	83			30	60		0	4	2	0		13.0	4.0		60		84		0	92	0		30		0	4	0		12.0		48	15,315	5,280	20,595
12		56	50			62	55			30	60		0	3	1	0		13.0	4.0		43		56		0	62	0		30		0	3	0		12.0		36	10,976	3,960	14,936
13		89	80			98	88			30	60		0	4	2	0		13.0	4.0		60		89		0	98	0		30		0	4	0		12.0		48	15,315	5,280	20,595
14		84	76			92	83			30	60		0	4	2	0		13.0	4.0		60		84		0	92	0		30		0	4	0		12.0		48	15,315	5,280	20,595
15		71	64			78	70			30	60		0	3	2	0		13.0	4.0		47		71		0	78	0		30		0	3	0		12.0		36	11,997	3,960	15,957
16		60	54			66	59			30	60		0	3	1	0		13.0	4.0		43		60		0	66	0		30		0	3	0		12.0		36	10,976	3,960	14,936
21		140				154				60			0	3	0	0		13.0			39		140		0	154	0		60		0	3	0		12.0		36	9,955	3,960	13,915
22		104				114				60			0	2	0	0		13.0			26		104		0	114	0		60		0	2	0		12.0		24	6,637	2,640	9,277
117		53	48			58	52			30	60		0	2	1	0		13.0	4.0		30		53		0	58	0		30		0	2	0		12.0		24	7,658	2,640	10,298
121		58				64				60			0	2	0	0		13.0			26		58		0	64	0		60		0	2	0		12.0		24	6,637	2,640	9,277
122		79				87				60			0	2	0	0		13.0			26		79		0	87	0		60		0	2	0		12.0		24	6,637	2,640	9,277
123		63				69				60			0	2	0	0		13.0			26		63		0	69	0		60		0	2	0		12.0		24	6,637	2,640	9,277

Peak Bus Requirement	0
Base Bus Requirement	54
Evening Bus Requirement	26

Wkday Rev. Hours		806
Year		205,732

Wkend Day Rev Hrs	648
Year	71,280

ANNUAL 277,012

ASSUMPTIONS	
Layover Rate (Percentage added to running time)	10%
Weekdays per Year	255
Weekends/Holidays per Year	110
Dwell Factors	
Rapid	0.15
Crosstown	0.25
Circulator	0.2
Express	0.1
Circulator/Express	0.15

Rapid

1 Bakersfield College/CSUB

Route 1 would connect the California State University Bakersfield Transit Center with the Bakersfield College Transit Center via the CSUB loop (clockwise on Don Hart Drive East; via Gosford Road and Kroll Way in the reverse direction), Stockdale Highway, California Avenue, Mt. Vernon Avenue, and the BC loop (clockwise on University Avenue, Haley Street and Panorama Drive).

Stops are proposed at:

- California State University Bakersfield Transit Center
- Stockdale Highway and Gosford Road
- Stockdale Highway and Ashe Road
- Stockdale Highway and California Avenue/New Stine Road
- California Avenue and Mohawk Street
- California Avenue and Chester Lane (Bakersfield Plaza)
- California Avenue and Oak Street
- California Avenue and F Street (Bakersfield High School, eastbound only)
- California Avenue and North Chester Avenue (eastbound)/H Street (westbound)
- California Avenue and P Street (Bakersfield Ice Sports Center/McMurtrey Aquatic Center)
- California Avenue and Union Avenue (Kern County Department of Human Services)
- California Avenue and South King Street
- California Avenue and Dr. Martin Luther King Jr. Boulevard/Haley Street
- California Avenue and Washington Street
- California Avenue and Mt. Vernon Avenue
- Mt. Vernon Avenue and Niles Street
- Mt. Vernon Avenue and Flower Street (Kern Medical Center)
- Mt. Vernon Avenue and Bernard Street (East Hills Mall)
- Mt. Vernon Avenue and Columbus Street
- Mt. Vernon Avenue and University Avenue
- Bakersfield College Transit Center

2 Oildale/CSUB

Route 2 would connect the California State University Bakersfield Transit Center with North High School via the CSUB loop (counterclockwise on Don Hart Drive East, Kroll Way and Gosford Road), Stockdale Highway, Old River Road, Ming Avenue (with a spur on Wible Road to the Southwest Transit Center), South and North Chester Avenue, and a clockwise loop of West China Grade Loop, McCray Street, and Universe Avenue.

Stops are proposed at:

- California State University Bakersfield Transit Center

- Stockdale Highway and Gosford Road (outbound only)
- Old River Road and Mercy Southwest Hospital
- Old River Road and Camino Media (State Farm Bakersfield Operations Center)
- Ming Avenue and the Marketplace
- Ming Avenue and Gosford Road
- Ming Avenue and Ashe Road
- Ming Avenue and New Stine Road
- Ming Avenue and Akers Road
- Southwest Transit Center (Valley Plaza)
- Ming Avenue and Hughes Lane
- Ming Avenue and South Chester Avenue
- South Chester Avenue and Belle Terrace
- South/North Chester Avenue and Brundage Lane
- North Chester Avenue and 4th Street
- North Chester Avenue and California Avenue
- North Chester Avenue and Truxtun Avenue (Bakersfield City Hall)
- Downtown Transit Center (on-street)
- North Chester Avenue and 26th Street (San Joaquin Community Hospital)
- North Chester Avenue and 34th Street
- North Chester Avenue and West Columbus Street
- North Chester Avenue and Roberts Lane
- North Chester Avenue and Wilson Avenue (Standard Middle/Elementary School)
- North Chester Avenue and China Grade Loop/West China Grade Loop
- Universe Avenue and Stockton Avenue (North High School)

Crosstown

10 Bakersfield College/Cottonwood/Valley Plaza

Route 10 would connect the Bakersfield College Transit Center to the Southwest Transit Center via the BC loop, Mt. Vernon Avenue, University Avenue, Panorama Drive, Fairfax Avenue, Auburn Street, Oswell Street, the East Hills Mall loop (clockwise Bernard Street, New Market Way, and Mall View Road), Oswell Street, College Avenue, Mt. Vernon Avenue, East Belle Terrace, Washington Street, Feliz Drive, Cottonwood Road, East Planz Road, Madison Avenue, East White Lane, South Union Avenue, Panama Lane, Akers Road, Wilson Road, and Wible Road (departing the Southwest Transit Center, it would use the SWTC loop, clockwise via Wible, Ming Avenue, Hughes Lane and Wilson Road). It would serve destinations including Kern Medical Center, East Bakersfield High School, the Bakersfield Adult School, the Kern County Career Services Center, and the Wal-Mart Supercenter on Panama Lane. (Note: If approval can be secured, Nelson\Nygaard has recommended that the Southwest Transit Center be reconfigured so that buses can exit through the center's south side, cross a short stretch of the Valley Plaza parking lot, and turn left onto Wible Road at a signalized intersection just south of the center. This would eliminate the need to make a clockwise loop around Valley Plaza in one direction on

this and several other routes, reducing travel times and potentially reducing operating costs. Nelson\Nygaard and GET staff have been in discussion regarding this issue, and the recommendation made here, to loop around Valley Plaza in the eastbound direction, should be viewed as interim in nature.)

11 Westchester/Panama Lane

Route 11 would connect the GET District offices on Golden State Road to the Wal-Mart Supercenter on Panama Lane via Golden State Road, F Street, 23rd Street, Eye Street (in the reverse direction, 22nd Street to F Street), the Downtown Transit Center, North Chester Avenue, Truxtun Avenue, Oak Street, a diversion on Wible Road to the Southwest Transit Center and back, Ming Avenue, South Chester Avenue, Planz Road, Raider Drive, Merrimac Avenue, Monitor Street, Panama Lane, and a counterclockwise loop using Colony Street and the Wal-Mart parking lot. It would serve destinations including Bakersfield City Hall, Mercy Hospital, Valley Plaza, and South High School.

12 Bakersfield College/Truxtun

Route 12 would connect the Bakersfield College Transit Center to the Social Security offices near Truxtun Avenue and Mohawk Street via an extended version of the BC loop (with Columbus Street to the south rather than University Avenue), Columbus Street, River Boulevard, Bernard Street, Q St, 21st Street, the Downtown Transit Center, North Chester Avenue, Truxtun Avenue, and a clockwise loop using Commercial Way and Office Park Drive. It would serve destinations including the College Shopping Center, Bakersfield Memorial Hospital, Central Park at Mill Creek, Bakersfield City Hall, Mercy Hospital, and the Truxtun medical corridor. (Note: As soon as necessary approvals and funding can be secured, it is recommended that Routes 12 and 16 be connected. This would require a new westbound “bay” or pull-out bus stop on Truxtun Avenue at Commercial Way or, alternately a new traffic signal at Office Park Drive. The Route 16 spur on Truxtun Avenue west of Mohawk Drive would also have to be eliminated. However, combining the routes would connect Route 16 riders directly to downtown and Bakersfield College. Nelson\Nygaard and GET staff have been in discussion regarding this issue, and the recommendation made here, to operate Routes 12 and 16 separately, should be viewed as interim in nature.)

13 Bakersfield College/White Lane

Route 13 would connect the Bakersfield College Transit Center to White Lane and Gosford Road via the BC loop, Mt. Vernon Avenue, Flower Street, Baker Street, 19th Street, Union Avenue, South Union Avenue, Ming Avenue, Wible Road, the Southwest Transit Center, the Valley Plaza loop (in the westbound direction only; see previous note under Route 10), Wible Road, White Lane, and a clockwise loop of Cernan Way, McNair Lane, and Gosford Road. It would serve destinations including East Hills Village, East Bakersfield High School, Kern Medical Center, Old Town Kern, the Kern County Department of Human Services, the Kern County Fairgrounds, Valley Plaza, and Good Samaritan Hospital Southwest.

14 Oildale/Foothill

Route 14 would connect North High School to Pioneer Drive and Morning Drive via a clockwise loop of Universe Avenue, North Chester Avenue, and West China Grade Loop, then McCray Street, Oildale Drive, Decatur Street, Airport Drive, Buck Owens Boulevard, Brittan Road, Sillect

Avenue, Buck Owens Boulevard, Rosedale Highway, 24th Street, 23rd Street (24th in the reverse direction), Eye Street, the Downtown Transit Center, North Chester Avenue, Truxtun Avenue, Beale Street, Monterey Street (Niles Street in the reverse direction), Niles Street, Morning Drive, Foothill Road and Park Drive. It would serve destinations including Good Samaritan Hospital, Bakersfield Heart Hospital, Bakersfield City Hall, Rabobank Arena Theater & Convention Center, Beale Library, the Bakersfield Amtrak Station, Old Town Kern, Hillcrest Shopping Center, and Foothill High School.

15 Stockdale Village/Foothill

Route 15 would connect Pioneer Drive and Morning Drive to Stockdale Fashion Plaza via Foothill Road, Park Drive, Eucalyptus Drive, Fairfax Road (the previous segment would be along Pioneer Drive in the reverse direction), Pioneer Drive, Oswell Frontage Road/Laguna Seca Way (Pioneer Drive in the reverse direction), Oswell Street, Virginia Avenue, East 4th Street, 4th Street, North Chester Avenue, Brundage Lane, Stockdale Highway, and a clockwise loop of Village Lane, Marsha Street, Palmer Drive, Demaret Avenue and New Stine Road. It would serve destinations including Foothill High School.

16 Truxtun/Panama Lane

Route 16 would connect the Social Security offices near Truxtun Avenue and Mohawk Street to the Wal-Mart Supercenter on Panama Lane via Office Park Drive, Commercial Way, Truxtun Avenue, Truxtun Plaza West, Truxtun Avenue, Mohawk Street, California Avenue, New Stine Road, Stine Road, Panama Lane, and a counterclockwise loop using Colony Street and the Wal-Mart parking lot. It would serve destinations including the Truxtun medical corridor, Stockdale Village, Stockdale Fashion Plaza, and West High School.

Community

21 Bakersfield College/CSUB/Panama Lane

Route 21 would connect the Bakersfield College Transit Center to White Lane and Gosford Road via the BC loop, Panorama Drive, River Road, Columbus Street, West Columbus Street, North Chester Avenue, Roberts Lane, Airport Drive, Olive Drive, Coffee Road, Rosedale Highway, the Northwest Promenade Wal-Mart parking lot, Granite Falls Drive, Coffee Road, the CSUB loop (Stockdale Highway, Don Hart Drive East, the CSUB Transit Center, and Kroll Way; the reverse in the opposite direction), Gosford Road, and a clockwise loop of White Lane, Cernan Way, and McNair Lane. It would serve destinations including Garces Memorial High School, Good Samaritan Hospital, and Northwest Promenade.

22 Valley Plaza/Greenfield/Ridgeview

Route 22 would connect the Southwest Transit Center to Akers Road and Harris Road via the SWTC loop, Hughes Lane, White Lane, South H Street, a spur to the Wal-Mart Supercenter on Panama Lane, Panama Lane, Monitor Street, Hosking Avenue, South Union Avenue, Taft Highway, South H Street, Hosking Avenue, Stine Road, Harris Lane, Akers Road, and Panama Lane. It would serve destinations including Golden Valley High School and Ridgeview High School.

Express

117 Crosstown Express

Route 117 would connect the Bakersfield College Transit Center to the Southwest Transit Center via the existing Route 17 Crosstown Express alignment. Like Route 17, its only additional stop would be at the Downtown Transit Center.

X92 Tejon Complex Express

This route would remain unchanged. (However, its numbering might be changed to conform to the recommended convention of 100-series numbering for express routes. Unlike Route 117 Crosstown Express and the 120-series Circulator/Express routes, it is not related to a non-express service category; for this reason, it might simply be designated Route 100.)

Circulator/Express

121 Downtown/Rosedale

Route 121 would connect Olive Drive and Old Farm Road to the Downtown Transit Center via a counterclockwise loop of Reina Road, Old Farm Road, and Olive Drive, then Jewetta Avenue, Hagemen Road, Main Plaza Drive, Rosedale Highway (Granite Falls Drive in the reverse direction) and the Northwest Promenade Wal-Mart parking lot, from which point it would operate as an express via Granite Falls Drive and Coffee Road (the Wal-Mart parking lot in the reverse direction), Rosedale Highway, 24th Street , 23rd Street (24th Street in the reverse direction), and Eye Street. It would make express stops at Vista West High School (immediately before and after the end of the school day only), and Buck Owens Boulevard. This route could be extended to Frontier High School if the GET Board of Directors so chose.

122 Downtown/Rosedale/CSUB

Route 122 would connect the CSUB Transit Center to the Downtown Transit Center via the CSUB loop, Stockdale Highway, Jewetta Avenue, Brimhall Road, Allen Road, Rosedale Highway (plus Granite Falls Drive and Main Plaza Drive in the reverse direction), and the Northwest Promenade Wal-Mart parking lot, from which point it would operate as an express via the same alignment as Route 121 alignment. It would make the same express stops as Route 121.

123 Downtown/Half Moon

Route 123 would connect North Half Moon Drive and Ashe Road to the Downtown Transit Center via the western segments of North and South Half Moon Drive, Ashe Road, White Lane, Wilson Road, and Wible Road to the Southwest Transit Center (it would use the SWTC loop in the reverse direction), from which point it would operate as an express via Wible Road, Ming Avenue, State Route 99, California Avenue, and North Chester Avenue. It would serve Valley Plaza, and make express stops at Oak Street, at California Avenue and North Chester Avenue, and at Truxtun Avenue adjacent to Bakersfield City Hall.

MIDTERM (2021-25) & LONG-TERM (2026-2035) SERVICE PLANS

The Short-Term Service Plan takes a "hybrid" approach to transit route network design, combining elements of "pulse" timed-transfer (or radial "hub-and-spoke") and grid-based systems. In the Midterm, however, it is assumed that additional funding would become available, making a grid system feasible. In the Long-Term, lines could be extended, new modes of service introduced and frequencies increased. Both the Midterm and Long-Term Service Plans accommodate future growth in outlying areas, extending well beyond the area of existing development served by the Short-Term route network.

The Midterm and Long-Term Service Plans were developed using:

- conceptual networks developed by Kern COG staff
- projected year 2035 residential and employment densities for Metropolitan Bakersfield provided by Kern COG
- year 2050 Village, Town, Community and Metro Centers as identified in the Kern Blueprint Alternative Scenario

While the horizon years for both the Midterm and Long-Term Service Plans are well in advance of the 2050 horizon used to identify locations of future Centers, the Service Plans have leveraged the grid concept in order to develop a route network that can relatively easily be scaled to reflect actual patterns of land use and ridership growth. In short, lines could be either truncated or extended as needed (as will be further explained in the following pages).

Other principles used to develop the Midterm and Long-Term Service Plans include the Stakeholder Priorities, GET Vision Statement and Planning Guidelines, and General Transit Planning Principles identified earlier in this chapter, as well as principles for designing a transit route network based on a "grid" or non-radial pattern including:

- multiple "nodes" or points of connectivity rather than a few large transfer centers
- an emphasis on "crosstown" routes that do not directly serve central areas, rather than "radial" routes that do so
- relatively direct alignments, preferably along a single corridor (although in order to provide direct connections or "one-seat rides" between different corridors and destinations, including "anchors" or major trip generators at the ends of routes, somewhat indirect and/or "L-shaped" routes may be used)
- an emphasis on "legibility," or easy-to-understand and remember routings

Grid networks have a number of inherent advantages and disadvantages in comparison to radial patterns. Several of the advantages are enumerated in the previous list, including more direct (and thus faster and potentially less expensive-to-operate) alignments and enhanced legibility. Among the disadvantages is the inherent difficulty of "timing" transfers at midpoints along routes, where vehicles cannot stop and wait for long without inconveniencing those already on board. (By contrast, radial or "hub-and-spoke" systems facilitate transfers by "pulsing," or having routes arrive and depart more or less simultaneously at transfer centers, which typically provide enhanced amenities in order to reduce the burden or penalty associated with waiting to transfer.) In order to mitigate this impact, grid networks typically rely on frequent service, generally every 30 minutes or less and preferably every 15 or less. This, however, can prove prohibitively cost-ineffective for systems operating outside of large urban areas.

It is for this reason that the Short-Term Service Plan extended the existing GET system's use of transfer centers. Indeed, the Midterm and Long-Term Service Plans described here would continue to use the planned transit centers at Bakersfield College and California State University, Bakersfield, as well as bus stops at the planned California High-Speed Rail (CAHSR) station, either within the station complex itself or adjacent to it. However, the existing Downtown and Southwest Transit Centers would be phased out.

In the Long-Term Service Plan, which is financially unconstrained, all GET bus lines except one[7] would operate on headways of 30 minutes or less during daytime hours, seven days a week. If funding allowed, all lines could operate on headways of 15 minutes or less. However, even with some 30-minute headways, the unconstrained financial scenario shown here would nearly double existing GET operating costs. The constrained Midterm "sales tax" scenario would include some routes operating on hourly headways.

Under any funding and service scenario, it will be important that special attention be paid to measures to reduce the inconvenience and discomfort associated with transfers. These might include: enhanced amenities at stops, such as large shelters with adequate seating for large numbers of passengers; widespread availability of real-time arrival information on multiple platforms; and measures to improve pedestrian safety and comfort at intersections where transfers are scheduled to take place.

The route networks envisioned for both the Midterm and Long-Term Service Plans would be similar. The key differences between the Plans are: 1) upgrades to levels of service, and 2) new modes of service in the Long-Term, including commuter rail and, potentially, light rail. As was mentioned previously, it would be possible to further phase implementation in tandem with patterns of land use and ridership growth, for example by shortening some lines. These concepts are further explained in the following section.

All projected costs in this report are high-level estimates. This is especially true for the Midterm and Long-Term Service Plans, as many of the route segments included here have not been "test-driven" during field research by Nelson\Nygaard staff, and in some cases "turnarounds" at terminals have not been identified (in some cases, these can add significant distance to a route, potentially increasing operating costs). In cases where route segments have not been tested in the field, speeds and in turn costs have been estimated based on observed speeds for similar segments. During field research, Nelson\Nygaard staff found that "typical" arterial speeds throughout Metropolitan Bakersfield (assuming "bus behavior" of curb lane operation and relatively slow acceleration and deceleration) are generally in the 20 to 25 mile per hour range during the day. Dwell (loading and unloading) and recovery (layover) factors have been applied to arrive at total travel times and operating costs for each route. These factors assume the measures to improve transit speeds identified in the Short-Term Plan, including wider stop spacing. They do not assume future degradation in travel speeds. It is important to note, however, that the Midterm and Long-Term Service Plans are designed to be scalable, both in terms of route extent and operating cost, as frequencies can be adjusted depending on available funding.

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7 The existing Route X92, a commuter service whose schedule is connected to shift start and end times at the IKEA facility at Tejon Ranch, would continue to operate on longer headways.

Midterm Service Plan (2021-2025)

The Midterm Service Plan assumes roughly a one-third increase in available revenues, via passage of a sales tax measure or other means, allowing the number of revenue service hours operated annually to be increased to approximately 360,000. If additional revenues cannot be generated by the Midterm horizon of Fiscal Years 2021-2025, it is recommended that the Short-Term route network be left in place until such revenues can be found. The Service Plan described here could be implemented, but with greatly reduced service levels, resulting in significant transfer penalties system wide.

The Midterm Service Plan, while distinct from the Short-Term Service Plan, would incorporate elements of that plan, helping to facilitate a relatively smooth transition from the Short-Term to Midterm. Most notably, it would maintain:

- Rapid Lines 1 and 2
- The planned BC and CSUB transit centers
- Key segments of the Crosstown routes (which, in turn, are based on relatively productive segments of existing GET routes)

It would also feature elements including:

- Capital upgrades to Rapid corridors in order to enable more fully featured and robust Bus Rapid Transit (BRT) service (to be implemented as funding allows)
- Additional Express routes serving areas of planned development (along 7th Standard Road and at Bakersfield Commons) and/or taking advantage of new infrastructure (the Westside Parkway)
- Potential minor deviations of routes to directly serve the planned CAHSR station west of Union Avenue between Truxtun and California Avenues (alternately, routes could stop on-street adjacent to the station)
- A number of park-and-ride facilities at locations to be determined (a few conceptual locations are shown on the Midterm Service Plan map in Figure 5-3).

The Midterm Service Plan assumes construction of the CAHSR station in the Midterm, by 2021, in conformance with the recently released California High-Speed Rail Authority Business Plan (the Plan's "Initial Operating Segment," between the Central Valley and either the San Fernando Valley or San Jose, would begin operation that year). Were construction delayed or canceled, the Midterm Plan could still be implemented as shown; however, while both the Midterm and Long-Term Plans are primarily gridded in nature, the CAHSR station is envisioned as a multimodal transfer center, essentially replacing the existing Downtown Transit Center at Chester Avenue and 22nd Street, and as such it is central to the organizational logic of the Midterm and Long-Term route networks.

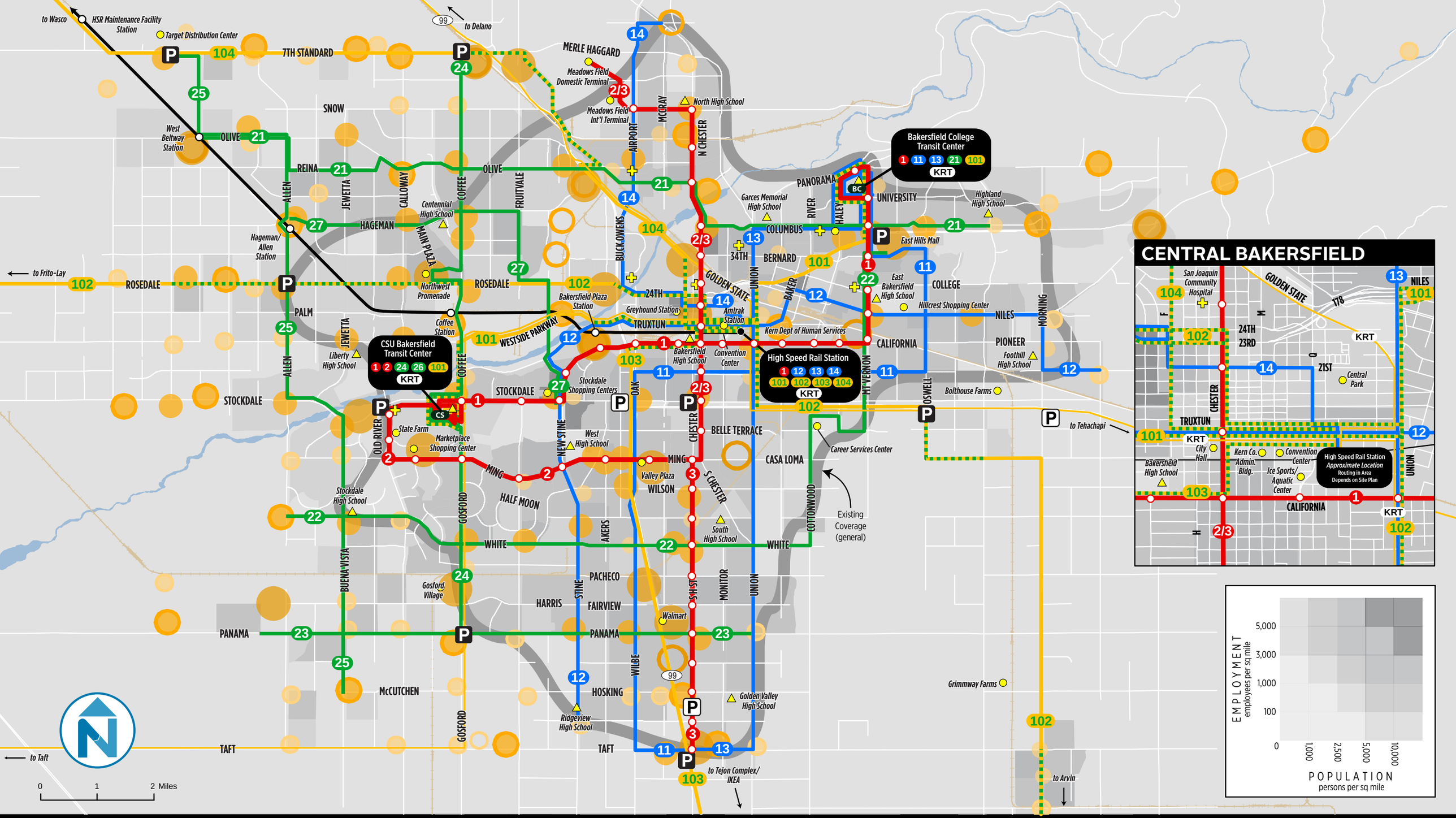
Both the Midterm and Long-Term Plans include the following categories of GET service:

- **Rapid service.** In the Midterm, these lines are envisioned to be upgraded, as funding allows, to provide BRT service with bus-only lanes in some segments, raised platforms and ticket machines at all stops, and larger, custom vehicles. A conceptual strategy for implementation of Rapid and BRT service is included in the Financial Plan in the following chapter and in the implementation strategy in the final chapter of this report.
- **Local service.** Just as the Short-Term Service Plan included "Crosstown" and Circulator" categories, the Midterm and Long-Term Service Plans include two "tiers" of

local-stop bus service operating relatively frequently and somewhat less frequently (the "Crosstown" and "Circulator" nomenclature has not been adopted, since most lines would be "crosstown" in nature).

- **Express service.** The express routes included in this plan would include segments of local-stop operation, and unlike "typical" express routes in many locations, which are focused on peak-period service for commuters, they would operate all day, providing relatively fast transit service to and from outlying areas.

Proposed routes are illustrated in Figure 5-3. Proposed cycle times, headways and spans, and revenue hours for GET service are shown in Figure 5-4. Revenue hours for commuter rail and "enhanced Kern Regional Transit" service are not included in revenue hour/cost calculations (this is further addressed in the following paragraphs).



CENTRAL BAKERSFIELD

FIGURE 5-3: MAP OF PROPOSED GET, ENHANCED KRT, AND COMMUTER RAIL FIXED-ROUTE SERVICE (MIDTERM)

GET HIGH CAPACITY (BRT)
Every 15 minutes (7.5 minutes combined)
1 2 3

GET LOCAL BUS
Every 20 minutes
11 12 13 14
Every 30-60 minutes
21 22 23 24 25 27

GET EXPRESS BUS (with local segments)
Up to Every 20 Minutes
101 102 103 104

Commuter Rail

Enhanced KRT Service

P Park & Ride

P Proposed Park & Ride (commuter rail stations also provide parking)

Existing Coverage (general)

CENTERS
Existing/Planned
Potential

Village (Neighborhood)

Town (Grocery)

Community (Major Retail)

Data Sources: Kern COG, City of Bakersfield GIS

GET bus
GOLDEN EMPIRE TRANSIT DISTRICT

Figure 5-4 Calculation of Revenue Hours (Midterm)

	WEEKDAY																					WEEKEND																		
	RND TRIP TIME excluding recovery				RND TRIP TIME including recovery				FREQUENCY				VEHICLES				HRS/WEEKDAY				WKDAY REV HRS	RND TRIP TIME excluding recovery			RND TRIP TIME including recovery			FREQUENCY			VEHICLES			HRS/WKEND DAY			WKEND REV HRS	Weekday Rev. Hours	Weekend Rev. Hours	Total Calc. Rev. Hours
Route	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt		Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve				
1		68	61			75	67			15	15		0	5	5			13.0	4.0		85		68	61		75	67		15	15	0	5	5		12.0	4.0	80	21,696	8,800	30,496
2		95	86			105	94			15	15		0	7	7			13.0	4.0		119		95	86		105	94		15	15	0	7	7		12.0	4.0	112	30,375	12,320	42,695
3		82	74			90	81			15	15		0	7	6			13.0	4.0		115		82	74		90	81		15	15	0	7	6		12.0	4.0	108	29,354	11,880	41,234
11		133	120			146	132			20	60		0	8	3			13.0	4.0		116		133	120		146	132		20	60	0	8	3		12.0	4.0	108	29,609	11,880	41,489
12		106	95			117	105			20	60		0	6	2			13.0	4.0		86		106	95		117	105		20	60	0	6	2		12.0	4.0	80	21,952	8,800	30,752
13		82	74			90	81			20	60		0	5	2			13.0	4.0		73		82	74		90	81		20	60	0	5	2		12.0	4.0	68	18,633	7,480	26,113
14		51	46			56	50			20	60		0	3	1			13.0	4.0		43		51	46		56	50		20	60	0	3	1		12.0	4.0	40	10,976	4,400	15,376
21		133				146				60			0	3	0			13.0			39		133	120		146	132		60		0	3	0		12.0		36	9,955	3,960	13,915
22		97	87			107	96			30	60		0	4	2			13.0	4.0		60		97	87		107	96		30	60	0	4	2		12.0	4.0	56	15,315	6,160	21,475
23		73				80				60			0	2	0			13.0			26		73	66		80	72		60		0	2	0		12.0		24	6,637	2,640	9,277
24		72	65			79	71			30	60		0	3	2			13.0	4.0		47		72	65		79	71		30	60	0	3	2		12.0	4.0	44	11,997	4,840	16,837
25		80				88				60			0	2	0			13.0			26		80	72		88	79		60		0	2	0		12.0		24	6,637	2,640	9,277
26		37				41				60			0	1	0			13.0			13		37	33		41	37		60		0	1	0		12.0		12	3,318	1,320	4,638
27		41				45				60			0	1	0			13.0			13		41	37		45	41		60		0	1	0		12.0		12	3,318	1,320	4,638
101		67	60			74	66			20	60		0	4	2			13.0	4.0		60		67	60		74	66		20	60	0	4	2		12.0	4.0	56	15,315	6,160	21,475
102		160				176				60			0	3	0			13.0			39		160	144		176	158		60		0	3	0		12.0		36	9,955	3,960	13,915
103	109	109			120	120			60	120			2	1	0		6.0	7.0			19					0	0				0	0	0				0	4,850	0	4,850
104		71				78				60			0	2	0			13.0			26		71	64		78	70		30		0	3	0		12.0		36	6,637	3,960	10,597

Peak Bus Requirement	2
Base Bus Requirement	67
Evening Bus Requirement	32

Wkday Rev. Hours	1,005
Year	256,275

Wkend Day Rev Hrs	932
Year	102,520

ANNUAL 359,046

ASSUMPTIONS	
Layover Rate (percentage added to running time)	10%
Weekdays per Year	255
Weekend Days/Holidays per Year	110
Dwell Factors	
Rapid	0.15
Crosstown	0.25
Circulator	0.2
Express	0.1
Circulator/Express	0.15

The two “tiers” of local service previously described are, in the Midterm Plan, effectively three tiers. This is due to financial constraints: in the Long-Term, all “20-series” lines would operate on the same headways and over the same spans.

As envisioned, the Midterm Service Plan would provide significantly more service to outlying areas than the Short-Term Service Plan, including additional Rapid/BRT service to the south (Lines 2 and 3 would overlap to provide a high level of service along Chester Avenue), several crosstown routes on the west side of Bakersfield, and new express service between Arvin and the Frito-Lay facility west of Bakersfield, via the CAHSR station in central Bakersfield.

In addition to the GET services described above, the Midterm Service Plan assumes implementation of peak period-only, unidirectional (inbound AM, outbound PM) commuter rail service between Wasco, Shafter, Northwest Bakersfield and the downtown CAHSR station (generally within the existing Amtrak/planned California High Speed Rail corridor; a Kern COG Commuter Rail Feasibility Study is currently underway), as well as three “enhanced” Kern Regional Transit lines operate on hourly headways throughout the day between the CAHSR station and Delano, Tehachapi and Taft (in the same general corridors as the existing North Kern Express, East Kern Express, and Westside Express routes, the first two of which are among KRT’s most productive).

Revenue hour requirements for these services have been estimated but have not been included in the 360,000-hour total for GET; rather, it has been assumed that commuter rail and KRT service would be funded from separate sources. In any case, annual revenue hour requirements for commuter rail service are estimated to be approximately 1,000 hours, and for enhanced KRT service, 32,000 hours.

It should be noted that in addition to connecting to GET at the CAHSR station, it is assumed that enhanced KRT service would connect to GET at the CSUB and BC Transit Centers as well as other key transfer points. The new lines would serve future growth centers identified in the Kern Blueprint Alternative Scenario, and would provide long-distance intercity express service, in contrast to the metropolitan express service to be provided by GET (the Midterm Plan assumes one exception: continued operation of Route X92 by GET.)

As was previously mentioned, it might be possible to reduce costs or increase service levels by truncating some routes. In the Long-Term Service Plan, lines generally continue to the farthest outlying Town or Community Center in the corridor. However, as was previously explained, the horizon year for these centers is 2050; by 2025, some will not have been developed or will not have been developed to the extent envisioned. For example, in the Long-Term Plan, Line 21 is shown extending east on Kern Canyon Road well past the farthest outlying existing area of development, City in the Hills. The line would have to be significantly truncated to reduce the base, or weekday vehicle requirement from three vehicles to two at the planned headway of 60 minutes. However, a relatively modest truncation could allow the service to operate on a 45-minute headway. Under the proposed system, numerous such examples exist. In any case, service should not be provided to an area until adequate demand for transit exists to justify the cost of its operation. (It should be noted that in the future, routes could also relatively easily be extended to serve even more outlying developments.)

Another option for reducing costs in the Midterm would be a strategy of phased implementation of Rapid Line 3. Together, Rapid Lines 2 and 3 would provide very frequent service (every 7.5 minutes in the Midterm) along Chester Avenue from Ming Avenue to McCray Street. Already, this corridor is highly productive, and a number of existing and planned centers are located within it.

However, it would be possible to introduce Rapid Line 3 as a local-stop service, a limited-stop service without other attributes of Rapid service (such as signal preemption), or as a Rapid service operating less frequently.

Long-Term Service Plan (2026-2035)

In the Long-Term, three types of changes would take place: frequencies would be reduced, or levels of service increased; lines would be extended to serve new outlying development; and additional rail service would be introduced, including new commuter rail lines as well as, potentially, light rail.

Proposed routes are illustrated in Figure 5-5, and proposed operating parameters for GET bus service are shown in Figure 5-6 (rail and intercity bus service is not included; as the Long-Term Service Plan is financially unconstrained, these have not been estimated).

In the Long-Term, service levels would be increased so that waits to transfer would be no longer than 30 minutes, and in most cases no longer than 15 minutes, during daytime hours. If funding allowed, waits could be further reduced, including the proposed waits of up to 60 minutes during evenings. The "unconstrained" scenario described here provides what we believe to be a reasonably high quality of transit service given current growth projections. In addition to improved daytime frequencies, it would provide evening service on all routes, evening service on weekends, and overnight service on Rapid corridors (note that while this service is shown in the table as operating only on weeknights, it could operate overnight on weekends as well).

In addition to increased service, new modes of service would be introduced in the Long-Term:

- In addition to the existing service between the CAHSR station and Wasco, new commuter rail service would be introduced between the CAHSR station and Buttonwillow (via Southwest Bakersfield and the Frito-Lay facility) and the CAHSR station and Arvin (via Lamont). Station locations shown in Figure 5-5 for commuter rail service are conceptual and are based on discussions with Kern COG staff. Each station in Metropolitan Bakersfield would serve as a multimodal hub, with connecting bus services. Despite higher hourly operating costs for rail service than for bus service (and despite the likely need to provide "last-mile" shuttle service from some stations), commuter rail service could be relatively inexpensive to operate, simply because it is assumed that relatively little service would be provided, likely peak-only or relatively infrequent at other times (as was noted in Chapter 3, Best Practices, commuter rail costs per passenger are typically higher than for other transit modes). However, capital costs could be significant, even given the availability of existing right-of-way; tracks could not be shared with high-speed rail service, and the Buttonwillow line assumes a new segment of track along South Union Avenue. Additionally, stations would have to be built, and railcars purchased: commuter service could be provided by standard diesel locomotive trains, by diesel multiple-unit (DMU) railcars or by electric multiple-unit (EMU) railcars.
- Parts or all of the BRT corridors developed in the Midterm could be upgraded to provide Light Rail Transit (LRT) service making use of infrastructure already developed for BRT, including dedicated rights-of-way and stations (some modifications would be necessary). As with commuter rail, this concept has already been studied in some detail as parts of other planning processes; the preferred light rail alignment first identified in the 1990s included segments of Rapid Lines 1 and 2. While an upgrade from BRT to LRT service in the same corridor (along arterials, if segments of existing Rapid alignments were used) would not necessarily improve mobility, it might attract additional riders and, depending

on demand, could be more cost-effective to operate on a cost-per-trip or cost per-passenger mile basis. Furthermore, it could have a significant developmental, economic and environmental impact. To determine whether an upgrade to LRT would be a cost-effective investment, an alternatives analysis (which is required for all FTA New Starts funded projects) should be conducted at the end of the Midterm. This would include an analysis of potential:

- Mobility improvements, measured by travel time benefits per project passenger mile, low-income households served, and employment near stations
- Environmental benefits, measured by change in regional pollutant emissions, change in regional energy consumption, and EPA air quality designation
- Cost effectiveness, measured as the cost per hour of travel time saved
- Transit supportive land use and future patterns, measured by existing land use, transit supportive plans and policies and performance, and impacts of policies
- Other objectives, including economic impact

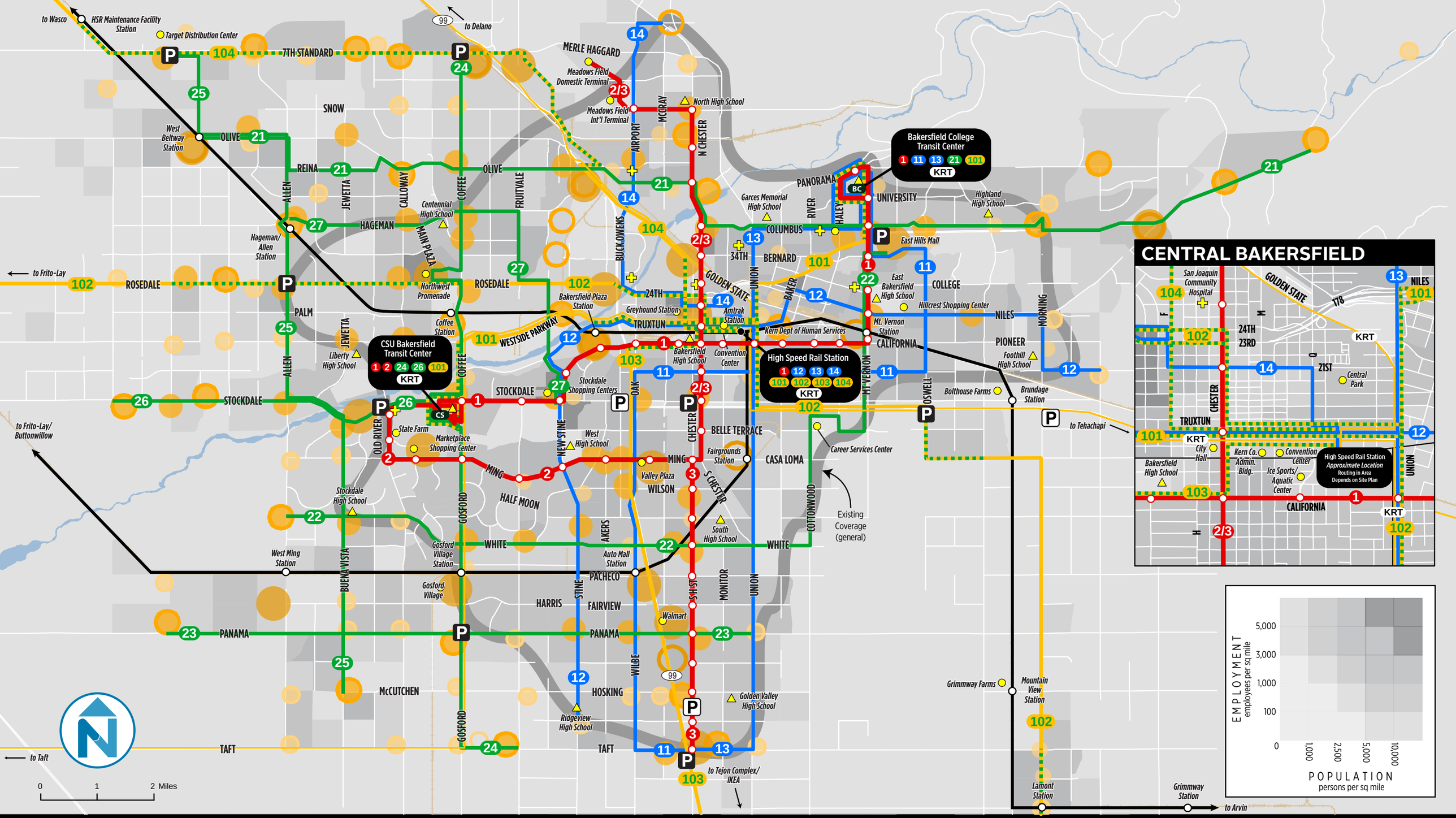


FIGURE 5-5: MAP OF PROPOSED GET, ENHANCED KRT, AND COMMUTER RAIL FIXED-ROUTE SERVICE (LONG-TERM)

GET HIGH CAPACITY
(Light Rail or BRT)
Every 10 minutes
(5 minutes combined)
1 2 3

GET LOCAL BUS
Every 15 minutes
11 12 13 14
Every 30 minutes
21 22 23 24 25 26 27

GET EXPRESS BUS
(with local segments)
Up to Every 15 Minutes
101 102 103 104
Commuter Rail

Enhanced KRT Service
P Park & Ride
P Proposed Park & Ride (commuter rail stations also provide parking)

Existing Coverage (general)

CENTERS
Existing/Planned
Potential
Village (Neighborhood)
Town (Grocery)
Community (Major Retail)

Data Sources: Kern COG, City of Bakersfield GIS

GET bus
GOLDEN EMPIRE TRANSIT DISTRICT

Figure 5-6 Calculation of Revenue Hours (Long-Term)

	WEEKDAY																				WEEKEND																					
	RND TRIP TIME excluding recovery				RND TRIP TIME including recovery				FREQUENCY				VEHICLES				HRS/WEEKDAY				WKDAY REV HRS	RND TRIP TIME excluding recovery			RND TRIP TIME including recovery			FREQUENCY			VEHICLES			HRS/WKEND DAY			WKEND.REV HRS	Weekday Rev. Hours	Weekend Rev. Hours	Total Calc. Rev. Hours
Route	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt	Peak	Base	Eve	Nt		Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve	Peak	Base	Eve				
1		68	61	61		75	67	67		10	15	60	0	8	5	2		13.0	4.0	7.0	138		68	61		75	67		10	15	0	8	5		12.0	4.0	116	35,225	12,760	47,985
2		95	86	86		105	94	94		10	15	60	0	11	7	2		13.0	4.0	7.0	185		95	86		105	94		10	15	0	11	7		12.0	4.0	160	47,221	17,600	64,821
3		82	74	74		90	81	81		10	15	60	0	10	6	2		13.0	4.0	7.0	168		82	74		90	81		10	15	0	10	6		12.0	4.0	144	42,882	15,840	58,722
11		133	120			146	132			15	30		0	10	5	0		13.0	4.0		150		133	120		146	132		15	30	0	10	5		12.0	4.0	140	38,288	15,400	53,688
12		106	95			117	105			15	30		0	8	4	0		13.0	4.0		120		106	95		117	105		15	30	0	8	4		12.0	4.0	112	30,630	12,320	42,950
13		82	74			90	81			15	30		0	7	3	0		13.0	4.0		103		82	74		90	81		15	30	0	7	3		12.0	4.0	96	26,291	10,560	36,851
14		51	46			56	50			15	30		0	4	2	0		13.0	4.0		60		51	46		56	50		15	30	0	4	2		12.0	4.0	56	15,315	6,160	21,475
21		133	120			146	132			30	60		0	5	3	0		13.0	4.0		77		133	120		146	132		30	60	0	5	3		12.0	4.0	72	19,654	7,920	27,574
22		97	87			107	96			30	60		0	4	2	0		13.0	4.0		60		97	87		107	96		30	60	0	4	2		12.0	4.0	56	15,315	6,160	21,475
23		73	66			80	72			30	60		0	3	2	0		13.0	4.0		47		73	66		80	72		30	60	0	3	2		12.0	4.0	44	11,997	4,840	16,837
24		72	65			79	71			30	60		0	3	2	0		13.0	4.0		47		72	65		79	71		30	60	0	3	2		12.0	4.0	44	11,997	4,840	16,837
25		80	72			88	79			30	60		0	3	2	0		13.0	4.0		47		80	72		88	79		30	60	0	3	2		12.0	4.0	44	11,997	4,840	16,837
26		37	33			41	37			30	60		0	2	1	0		13.0	4.0		30		37	33		41	37		30	60	0	2	1		12.0	4.0	28	7,658	3,080	10,738
27		41	37			45	41			30	60		0	2	1	0		13.0	4.0		30		41	37		45	41		30	60	0	2	1		12.0	4.0	28	7,658	3,080	10,738
101		67	60			74	66			15	30		0	5	3	0		13.0	4.0		77		67	60		74	66		15	30	0	5	3		12.0	4.0	72	19,654	7,920	27,574
102		160	144			176	158			30	60		0	6	3	0		13.0	4.0		90		160	144		176	158		30	60	0	6	3		12.0	4.0	84	22,973	9,240	32,213
103	109	109			120	120			60	120			2	1	0	0	6.0	7.0			19					0	0				0	0	0				0	4,850	0	4,850
104		71	64			78	70			30	60		0	3	2	0		13.0	4.0		47		71	64		78	70		30	60	0	3	2		12.0	4.0	44	11,997	4,840	16,837

Peak Bus Requirement	2
Base Bus Requirement	95
Evening Bus Requirement	53

Wkday Rev. Hours		1,495
Year		381,225

Wkend Day Rev Hrs		1,340
Year		147,400

ANNUAL 528,999

ASSUMPTIONS	
Layover Rate (percentage added to running time)	10%
Weekdays per Year	255
Weekend Days/Holidays per Year	110
Dwell Factors	
Rapid	0.15
Crosstown	0.25
Circulator	0.2
Express	0.1
Circulator/Express	0.15

6 FINANCIAL PLAN

INTRODUCTION

The financial element for the Long-Range Transit Plan for Metropolitan Bakersfield is the subject of this chapter. The first section presents operating cost projections and capital improvement projects in the short-term and the funding sources to pay for the recommended Service Plan. The short-term plan assumes existing funding sources and is financially sustainable in the eight-year planning horizon. Two financial scenarios are assumed for the Midterm Service Plan beginning in FY 2020/21: 1) financially constrained based on existing funding sources and 2) enhanced funding that assumes passage of a local sales tax in Kern County. The Midterm operating and cost projections and funding scenarios also are described in this chapter. In the long-term, 2035 and beyond, the plan assumes no financial constraints. At the conclusion of this chapter a series of potential new funding sources are identified that could be pursued by GET and Kern County to help pay for service enhancements and required capital investments.

SHORT-TERM SERVICE PLAN COST PROJECTIONS

The Short-Term Service Plan (2013-2020) calls for a complete reconfiguration of GET's fixed-route network. This reconfiguration is based on a slight reduction in annual service hours from just over 309,000 to approximately 280,000. Because the reconfiguration provides more direct and faster travel times for many routes, ridership is expected to increase in the short-term. The Short-Term Service Plan is described in detail in Chapter 5.

The Short-Term Service Plan can be implemented with existing financial resources. Federal and state grant funds will be needed for vehicle replacements and other desirable capital improvement projects.

Operating Costs

The projected operating costs for the Short-Term Service Plan (2013-2020) are shown in Figure 6-1 below. Annual service hours decrease from just over 309,000 to 280,000, which reduces annual operating costs between FY 2010/11 and FY 2011/12. Annual service hours then remain constant through FY 2019/20, and operating costs increase at an annual inflation rate of 3%, totaling close to $27.1 million in FY 2019/20. GET-A-Lift annual service hours also remain constant over the short-term at 32,000, and annual operating costs increase at a 3% annual inflation rate. Total operating costs in FY 2011/12 are estimated at just under $21.4 million and gradually increase to $27 million in FY 2019/20.

Figure 6-1 Short-Term Service Plan Operating Cost Projections

	Actual	Short-Term Projection								
Operating Characteristics	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Boardings										
Fixed Route Service	6,902,502	6,902,502	7,040,552	7,216,566	7,577,394	7,728,942	7,497,074	7,647,015	7,799,956	7,955,955
GET-A-Lift	43,235	43,235	43,235	43,667	44,104	44,545	44,991	45,440	45,895	46,354
Total Service Hours										
Fixed Route Service	309,124	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000
GET-A-Lift	33,336	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000
Operating Costs										
Fixed Route Service	$21,440,909	$20,003,424	$20,603,527	$21,221,633	$21,858,281	$22,514,030	$23,189,451	$23,885,134	$24,601,688	$25,339,739
Cost/Hour	$69.36	$71.44	$73.58	$75.79	$78.07	$80.41	$82.82	$85.30	$87.86	$90.50
GET-A-Lift	$1,393,812	$1,378,091	$1,419,434	$1,462,017	$1,505,877	$1,551,054	$1,597,585	$1,645,513	$1,694,878	$1,745,725
Cost/Hour	$41.81	$43.07	$44.36	$45.69	$47.06	$48.47	$49.92	$51.42	$52.96	$54.55
Total Operating Costs	$22,834,721	$21,381,515	$22,022,961	$22,683,649	$23,364,159	$24,065,084	$24,787,036	$25,530,647	$26,296,567	$27,085,464

Notes and Assumptions:

Data provided by GET Planning Department for FYs 2009/10 and 2010/11.

Annual inflation rate for all costs is assumed to be 3%.

Fixed-Route Service includes Express services.

Fixed-route passenger boardings are assumed to remain the same between FY 2010/11 and FY 2011/12, and then increase 2% in FY 2012/13. GET plans to implement the Short-Term Service Plan in July 2012 (FY 2012/13), and as a result, ridership is expected to increase a modest 2.5% in FY 2013/14 as passengers adjust to the new service. Ridership is expected to increase the following year as well, but will be impacted in subsequent years due to a proposed fare increase. Between FYs 2017/18 and 2019/20, boardings are projected to increase 2% annually. Figure 6-2 shows the current fare structure and the two projected fare increases that are proposed in the short-term, with the first in FY 2013/14 and the second in FY 2016/17. The average revenue per boarding is calculated by dividing the total fare revenue collected by the total number of boardings. Because many passengers pay discounted fares or no fares and some pay with passes, the average fare per boarding is less than the current single-ride fare. The ratio of the average revenue per boarding to the single-ride fare was calculated for current fares (FY 2010/11), and was assumed to be constant when fares are raised in future years.

Figure 6-2 Projected Fare Increases in the Short-Term

		Projected Fare Increases	
	Current Fares	FY 2013-14	FY 2016-17
Single Ride	$1.25	$1.50	$1.75
Reduced Single Ride	$0.75	$1.00	$1.25
Express Single Ride	$1.50	$1.75	$2.00
Reduced Express Single Ride	$0.75	$1.00	$1.25
Day Pass	$3.00	$3.50	$4.00
Reduced Day Pass	$1.50	$1.75	$2.00
Express Day Pass	$5.00	$5.50	$6.00
Express Reduced Day Pass	$2.50	$2.75	$3.00
31-Day Pass	$36.00	$43.00	$50.00
Reduced 31-Day Pass	$18.00	$21.50	$25.00
Express 31-Day Pass	$50.00	$58.00	$66.00
Reduced Express 31-Day Pass	$25.00	$29.00	$33.00
GET-A-Lift			
Single Ride	$2.50	$3.00	$3.50
10 Ride pass	$25.00	$30.00	$35.00
Average Revenue per Boarding			
Fixed-Route Service	$0.75	$0.90	$1.05
GET-A-Lift	$2.11	$2.53	$2.95

Note: It is assumed that the ratio of the average revenue per boarding to the single-ride fare, which is 60% for fixed-route service and 84% for GET-A-Lift, remains constant in all future years.

Figure 6-3 shows key transit system performance measures based on the projected ridership and revenue assuming implementation of the Short-Term Service Plan. For fixed-route service, passengers per revenue hour, an indicator of system productivity, increases steadily between FY 2010/11 and 2019/20, with the exception of FY 2016/17 in which ridership is projected to decrease slightly due to a proposed fare increase. The farebox recovery ratio, which shows the percentage of operating costs covered by fare revenues, increases through FY 2016/17 and then drops slightly through FY 2019/2020 because operating costs are projected to increase at a faster overall rate than boardings and fare revenues. As shown by these performance indicators, although fare increases negatively affect the number of boardings (at least initially), they are necessitated by the steady increase in operating costs and rising inflation over time.

For GET-A-LIFT service, ridership is projected to increase at a modest annual rate of 1% between FY 2012/13 and FY 2019/20. Consequently, passengers per revenue hour increases only slightly over the short-term. The farebox recovery ratio declines for all years in the short-term except for those in which a fare increase is proposed.

Figure 6-3 Short-Term Service Plan Performance Measures

	Actual	Short-Term Projection								
	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Passengers per Revenue Hour										
Fixed Route Service	22.3	24.7	25.1	25.8	27.1	27.6	26.8	27.3	27.9	28.4
GET-A-Lift	1.3	1.35	1.35	1.36	1.38	1.39	1.41	1.42	1.43	1.45
Average Revenue per Boarding										
Fixed Route Service	$0.75	$0.75	$0.75	$0.90	$0.90	$0.90	$1.05	$1.05	$1.05	$1.05
GET-A-Lift	$2.11	$2.37	$2.37	$2.53	$2.53	$2.53	$2.95	$2.95	$2.95	$2.95
Farebox Recovery Ratio										
Fixed Route Service	24.0%	25.8%	25.5%	30.6%	31.2%	30.9%	33.9%	33.6%	33.3%	33.0%
GET-A-Lift	6.5%	7.4%	7.2%	7.6%	7.4%	7.3%	8.3%	8.2%	8.0%	7.8%

Notes and Assumptions:

Fare increases are projected in FY 2013/14 and FY 2016/17.

Average revenue per boarding is calculated for FY 2010/11 and is equivalent to 60% of the single-ride fare for fixed-route services and 84.4% of the single-ride fare for GET-A-Lift.

For future years, the ratio of average revenue per boarding to single-ride fare price is assumed to remain constant. Increases in average revenue per boarding are thus due to fare increases.

Capital Costs

Short-term capital costs consist of vehicle replacements, technology improvements, and other major capital projects, including the implementation of Rapid Bus service beginning in FY 2012/13 and full Bus Rapid Transit (BRT) service beginning in FY 2019/20. Figure 6-4 summarizes the capital cost projections for the short-term (FY 2011/12-2019/20). As shown in the figure, costs vary tremendously by year depending on whether vehicles are being replaced and there are other planned capital improvement projects.

For fixed-route vehicles, it is assumed that 11 buses ready for retirement in calendar year 2010 will be replaced in FY 2011/12. Additionally, 17 buses are scheduled for replacement in FY 2013/2014, and three are scheduled for replacement in FY 2014/15. GET currently has a fixed-route fleet comprised of 87 40-foot coaches. The Short-Term Service Plan only requires 54 40-foot coaches, plus an additional 11 vehicles to provide a spare ratio of 20%. Consequently, GET will be able to retire 22 vehicles in the short-term after they have reached their useful life.

The size of the GET-A-Lift fleet remains unchanged in the short-term. It is assumed that vehicles are replaced at the end of their useful life which is every five years.

In FY 2012/13, capital expenditures primarily are for Rapid Bus infrastructure and include Computer Aided Dispatch/Automatic Vehicle Location (CAD/AVL), shelters and enhanced passenger amenities (estimated to be approximately $50,000 per stop), and branding and marketing expenses for the new service. Transit signal priority equipment has already been installed in Downtown Bakersfield and is consequently not included as a capital expense for Rapid Bus implementation.

The conversion of Rapid service to full Bus Rapid Transit is anticipated in FY 2020/21 as part of the Midterm Service Plan and consists of dedicated transit lanes, enhanced stations, and prepaid, level boarding. Because it is projected that service would begin in FY 2020/21, capital costs related to BRT implementation are shown in FY 2019/20. Costs are based on the average cost per mile for the Santa Clara, CA Valley Rapid BRT project, which is $15.3 million (2009 dollars), and are escalated at 3% per year to FY 2019/20 dollars. Total costs assume the BRT project to include a total of 32.3 miles.

The Short-Term Service Plan also includes improvements to existing transit centers and construction of new facilities. Construction of a new transit center at Bakersfield College is already underway and has been fully funded. A new transit center will be constructed at CSUB, and the San Joaquin Valley Air Pollution Control District (APCD) is expected to provide capital funds for this project. The existing Southwest Transit Center will be upgraded in FY 2013/14, and it is recommended that GET construct a new facility at the Wal-Mart on Panama Road in FY 2016/17. Lastly, the Downtown Transit Center is recommended for rehabilitation in FY 2018/19.

Other capital costs in the short-term include $300,000 for the replacement of a bus wash and construction of a new, solar-powered bus operations and maintenance facility. The costs for this new facility are spread over a period of three years, starting in FY 2013/14.

Figure 6-4 Short-Term Service Plan Capital Cost Projections

Capital Costs	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Vehicles									
Fixed Route Service									
Cost	$4,308,333		$7,063,826	$1,283,954					
Number of Vehicles	11		17	3					
GET-A-Lift									
Cost	$1,288,000				$517,734	$1,493,145			
Number of Vehicles	14				5	14			
Support Vehicles	$160,000	$20,600	$403,142	$87,418		$92,742	$95,524	$98,390	$177,348
Technology Improvements									
CAD/AVL		$3,000,000							
Farebox/Fare Collection Upgrade				$1,000,000					
Rapid Bus									
Shelters and Passenger Amenities		$4,400,000							
Branding and Marketing		$100,000							
Conversion to Full BRT									$684,100,000
Transit Centers									
BC Transit Center	Funded								
CSUB - New				$2,500,000					
Downtown - Rehab								$2,000,000	
Southwest - Replacement			$1,000,000			$1,500,000			
Passenger Amenities									
Shelters		$250,000					$300,000		
Other									
Solar Power Plant, Admin. & Shop			$1,250,000	$1,250,000	$2,500,000				
Operations & Maintenance	$300,000								
Total Capital Costs	$6,056,333	$7,770,600	$9,716,968	$6,121,372	$3,017,734	$3,085,887	$395,524	$2,098,390	$684,277,348

Notes and Assumptions:

Annual inflation rate for all costs is assumed to be 3%. All fixed-route vehicles are assumed to be 40-foot coaches.

Vehicle replacements assume a 12- to 14-year useful life for fixed-route buses and a five-year useful life for GET-A-Lift paratransit vehicles.

CAD/AVL costs are from the GET Quarterly Project Status Report. It is assumed that these costs will be incurred in FY 2012/13.

For the Southwest Transit Center, it is assumed that more minor improvements will be made in FY 2013/14. In FY 2016/17, it is assumed that a new end-of-line facility would be constructed at the Wal-Mart on Panama Rd.

For Rapid Bus, the average cost per station or stop is $50,000, and there are a total of 83 stations for all three proposed rapid routes. Costs are for enhanced passenger amenities at each rapid stop.

Full BRT capital costs are incurred in FY 2019/20 with anticipated service implementation in FY 2020/21. Capital costs are based on an average cost per mile of $15.3 million (2009 dollars) for the Santa Clara, CA Valley Rapid BRT project.

The Short-Term Service Plan requires 54 fixed-route vehicles (40' coaches) plus a 20% spare ratio (11 vehicles).

Funding Strategy

The Short-Term Service Plan Funding Strategy summarized in Figure 6-5 compares the total operating and capital costs to expected funding sources. The specific funding sources are described in detail later in this chapter in the section titled "Funding Sources."

Operating funds come from four sources in the short-term:

- Fare revenues
- Miscellaneous revenues (leases, contract, etc.)
- Federal Transit Administration (FTA) Section 5307 funds (allocated annually)
- State Transportation Development Act (TDA) funds (allocated annually)

It is assumed that 65% of the annual FTA Section 5307 allocation is used for ongoing operating and maintenance costs. The other major source to fund the service is GET's TDA allocation. The higher the farebox recovery ratio (the extent to which fare revenues cover operating costs), the less TDA funds are required for operating expenses and the more they can be used to fund capital projects.

Capital funds come from a wider variety of federal, state, regional, and local sources. With the exception of FTA Section 5307 and TDA funding formula allocations, other capital funding sources are one-time, competitive grants, and none of the grant funds shown in Figure 6-5 have been committed at this time.

Vehicle purchases are funded primarily by federal Section 5309 and Congestion Mitigation and Air Quality Improvement (CMAQ)/Surface Transportation Program (STP) grants. GET has also applied for a $7 million State Proposition 1B grant for vehicle purchases in FY 2013/14. A small amount of funding for GET-A-Lift vehicle purchases is provided by Section 5310 grant funds.

If GET is able to successfully obtain grant funding for its projected capital needs, then the agency may be able to accumulate a funding reserve that can be used to fill unanticipated operating expenses or provide matching funds for future grants for large capital projects. The projected funding strategy for the Short-Term Service Plan anticipates an accumulation of reserve funds from FY 2012/13 through FY 2019/20.

Funding for implementation of Bus Rapid Transit has not been fully identified. It is possible that implementation could occur in phases, which would affect the funding strategy for the project. Closer to implementation, GET would need to develop a detailed project implementation plan, including a more specific funding strategy. Likely funding sources include the FTA Section 5309 New Starts and Small Starts programs (discussed in more detail in the "Funding Sources" section of this chapter), CMAQ/STP funds, regional Air Pollution Control District (APCD) funds, and new local sources, such as a countywide sales tax and/or parcel tax, vehicle registration fees, or developer impact fees. Given the uncertainty surrounding potential future federal and state funding, however, large capital projects may need to rely heavily on local funds for implementation.

Figure 6-5 Short-Term Service Plan Funding Strategy

Operating Funding Plan	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Revenue Hours and Costs									
Fixed Route Service	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000	280,000
GET-A-Lift	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000
Total Operating Costs	$21,381,515	$22,022,961	$22,683,649	$23,364,159	$24,065,084	$24,787,036	$25,530,647	$26,296,567	$27,085,464
Operating Funds Available									
Farebox Revenue									
Fixed Route Service	$5,151,985	$5,255,025	$6,494,909	$6,819,655	$6,956,048	$7,871,927	$8,029,366	$8,189,953	$8,353,752
GET-A-Lift	$102,441	$102,441	$110,566	$111,671	$112,788	$132,902	$134,231	$135,573	$136,929
Other Misc. Revenue	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Total Operating Revenues	$5,454,426	$5,557,465	$6,805,475	$7,131,326	$7,268,836	$8,204,829	$8,363,597	$8,525,527	$8,690,681
FTA Section 5307 Allocation	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188
Transportation Development Act (TDA) Allocation	$11,988,901	$12,527,307	$11,939,986	$12,294,645	$12,858,060	$12,644,019	$13,228,862	$13,832,852	$14,456,594
Total Operating Funds	$21,381,515	$22,022,961	$22,683,649	$23,364,159	$24,065,084	$24,787,036	$25,530,647	$26,296,567	$27,085,464
Capital Funding Plan									
Total Capital Costs	$6,056,333	$7,770,600	$9,716,968	$6,121,372	$3,017,734	$3,085,887	$395,524	$2,098,390	$684,277,348
Federal Funds									
FTA Section 5307 Allocation	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563
FTA Section 5307 Grant		$2,400,000							
FTA Section 5309 Grant	$2,238,533	$1,800,000		$800,000					$30,000,000
FTA Section 5310 Grant	$100,000				$100,000	$100,000			$0
CMAQ/STP Grant	$1,651,478	$1,991,925							$30,000,000
State and Local Funds									
TDA Allocation	$275,699	$227,877	$1,325,405	$1,501,363	$1,489,788	$2,277,743	$2,289,770	$2,306,525	$2,328,358
Prop 1B PTMISEA Grant			$7,000,000						
Public/Private Partnership		$500,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Reserve Funds Needed				$1,599,447					$9,000,000
Other Capital Sources									*$610,728,427*
Total Capital Revenues	$6,386,273	$9,040,365	$10,545,968	$6,121,373	$3,810,351	$4,598,306	$4,510,333	$4,527,088	$684,277,348
Annual Surplus/(Deficit)	$329,940	$1,269,765	$829,000	$0	$792,617	$1,512,419	$4,114,809	$2,428,698	$0
Reserve		*$329,940*	*$1,599,704*	*$829,258*	*$829,258*	*$1,621,875*	*$3,134,294*	*$7,249,102*	*$677,800*

Notes and Assumptions are at the bottom of the following page.

Fare Policy Changes

Raising fares is always an option for increasing revenues. Fares should be raised periodically to keep pace with the inflation rate. GET must meet its state mandated farebox recovery ratio of 20% for fixed route service and 10% for Get-A-Lift and thus must regularly increase fares to maintain these averages. Raising fares is often a last resort, and increasing them faster than the rate of inflation has the potential to have negative impacts, particularly on the transit dependent population which has few alternatives to transit. GET will continue to balance the revenue raising potential of increasing fares against the likelihood that a decrease in ridership will result, at least in the short-term. This Plan assumes two fare increases in the next ten years (in FY 2013/14 and 2016/17) and one in the first year of the midterm (FY 2020/21). Additional increases may be necessary in the midterm and longer term.

MIDTERM SERVICE PLAN COST PROJECTIONS

In the Midterm (2021-2025), it is assumed that additional funding would become available, allowing for not only more service but a different type of route network, a "grid" system in which transfers would be made at points throughout the system rather than at central Transit Centers requiring route deviations. The Midterm Service Plan also includes the introduction of commuter rail service in the high-speed rail right-of-way to the northwest, and the Rapid service introduced in the Short-Term would be upgraded to full Bus Rapid Transit service with dedicated rights-of-way and light rail-like stations. "Enhanced" KRT intercity express bus routes also would be introduced.

Because the Midterm Service Plan is dependent on the availability of new funding sources, two cost projections and funding strategies have been developed. The first (Fully Funded Scenario) assumes that new funding in the form of a countywide half-cent sales tax for transportation is available to fund both operating and capital costs. In this scenario, the Midterm Service Plan (described in more detail in Chapter 5) would be implemented, and annual service hours would increase to 360,000.

The second (Financially Constrained Scenario) assumes that no new funding is available. In this scenario, annual service hours are maintained at 280,ooo, and the Short-Term Service Plan is continued into the Midterm. The only change is that Rapid routes are converted to full BRT service.

Operating Costs - Fully Funded Scenario

Operating cost projections for the fully funded Midterm Service Plan are shown in Figure 6-6. Total operating costs increase significantly in this scenario due to the increase in revenue hours and the addition of commuter rail service in FY 2021/22. In FY 2020/21 operating costs are projected at $35.4 million and rise to nearly $41 million in five years. Operating costs per hour are assumed to increase at a 3% annual inflation rate.

Notes and Assumptions for Figure 6-5 (on the previous page):

Annual inflation rate for all costs is assumed to be 3%.

FTA Section 5307 allocation remains flat, and total TDA allocation decreases 6% from FY 2010/11 to FY 2011/12.

In FY's 2012/13 through 2018/19, the FTA 5307 allocation remains flat and the TDA allocation increases 4% per year.

The Short-Term Service Plan is implemented in July 2012 (FY 2012/13).

Fare increases are projected in FY 2013/14 and FY 2016/17.

Figure 6-6 Midterm Service Plan Operating Cost Projection – Fully Funded Scenario

	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Boardings					
Fixed Route Service	8,279,076	8,659,913	9,058,270	9,474,950	9,910,798
Commuter Rail	-	71,808	73,244	74,709	76,203
GET-A-Lift	46,817	47,285	47,758	48,236	48,718
Total Service Hours					
Fixed Route Service	360,000	360,000	360,000	360,000	360,000
Commuter Rail	-	1,020	1,020	1,020	1,020
GET-A-Lift	32,000	32,000	32,000	32,000	32,000
Operating Costs					
Fixed Route Service	$33,557,054	$34,563,766	$35,600,679	$36,668,699	$37,768,760
Cost/Hour	*$93.21*	*$96.01*	*$98.89*	*$101.86*	*$104.91*
Commuter Rail	-	$902,521	$929,597	$957,485	$986,209
Cost/Hour	-	*$884.82*	*$911.37*	*$938.71*	*$966.87*
GET-A-Lift	$1,798,096	$1,852,039	$1,907,600	$1,964,828	$2,023,773
Cost/Hour	*$56.19*	*$57.88*	*$59.61*	*$61.40*	*$63.24*
Total Operating Costs	$35,355,151	$37,318,326	$38,437,876	$39,591,013	$40,778,743

Notes and Assumptions:

Annual inflation rate for all costs is assumed to be 3%.

Fixed-route boardings for FY 2020/21 are from Fehr & Peer's ridership projections for the Midterm Service Plan. Boardings are projected to increase 4.6% annually until FY 2034/35.

GET-A-Lift boardings are assumed to increase 1% annually.

Commuter rail service to Wasco would begin in the FY 2021/22. Operating costs are based on the operating costs for Altamont Commuter Express rail service ($621/revenue hour in 2010 dollars and escalated to 2021 dollars).

Commuter rail boardings are based on the 2010 boardings for the Altamont Commuter Express (35.2 passengers per revenue hour per rail car) and are assumed to increase at the same rate as the general population (2%).

Fixed-route boardings in FY 2020/21 are based on modeling of the Midterm Service Plan with future land use scenarios. (See Appendix A for a detailed description of the modeling approach and assumptions.) For FY 2021/22 through FY 2034/35, it is assumed that ridership increases at an average rate of 4.6% per year. It is assumed that passengers using GET-A-Lift continue to increase at an average annual rate of 1%. Projected boardings and hourly operating costs for commuter rail service are based on comparable commuter rail service. The 2010 boardings per hour and hourly operating costs for the Altamont Commuter Express rail service that operates between Stockton and San Jose are guidelines for the proposed commuter rail service in Bakersfield.

Figure 6-7 shows key performance measures for the fully funded Midterm Service Plan. The number of fixed route passengers carried per hour drops initially due to the significant increase in revenue hours. As the service matures over time, ridership is expected to grow and the service will become more productive.

Figure 6-7 Midterm Service Plan Performance Measures – Fully Funded Scenario

Performance Measures	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Boardings					
Fixed Route Service	8,279,076	8,659,913	9,058,270	9,474,950	9,910,798
Commuter Rail	-	71,808	73,244	74,709	76,203
GET-A-Lift	46,817	47,285	47,758	48,236	48,718
Passengers per Revenue Hour					
Fixed Route Service	23.0	24.1	25.2	26.3	27.5
Commuter Rail	-	70.4	71.8	73.2	74.7
GET-A-Lift	1.5	1.5	1.5	1.5	1.5
Farebox Recovery Ratio					
Fixed Route Service	29.6%	30.1%	30.5%	31.0%	31.5%
Commuter Rail	-	33.9%	33.8%	33.9%	33.8%
GET-A-Lift	8.6%	8.5%	8.3%	8.2%	8.0%

Notes and Assumptions:

A fare increase is projected for FY 2020/21. No additional fare increases are projected in the midterm.

Average revenue per boarding was calculated for FY 2010/11 and is equivalent to 60% of the single-ride fare for fixed-route services and 84.4% of the single-ride fare for GET-A-Lift.

For future years, the ratio of average revenue per boarding to single-ride fare price is assumed to remain constant. Increases in average revenue per boarding are thus due to fare increases.

Commuter rail average revenue per boarding is based on the reported fare revenue per hour for the Altamont Commuter Express in 2010 ($210 per revenue hour in 2010 dollars and escalated to 2021 dollars).

A fare increase in the Midterm in FY 2020/21 is recommended. The average revenue per boarding increases to $1.20 for fixed-route service and $3.32 for GET-A-Lift. Average revenue per boarding for commuter rail is based on the revenue per hour reported for 2010 for the Altamont Commuter Express rail service.

Because of the increase in service hours, the farebox recovery ratio for fixed-route service declines somewhat in the midterm as compared to the short-term. The farebox recovery ratio for GET-A-Lift also declines over time, since costs increase at a faster rate than passenger revenues.

Operating Costs – Financially Constrained Scenario

In the financially constrained scenario, fixed-route service hours remain at 280,000 per year, the same level as the short-term and there is no commuter rail service. It is assumed that fixed-route boardings increase at an annual rate of 2%, approximately the same rate as projected population increase. GET-A-Lift boardings are assumed to increase at an annual rate of 1%. The only change in service under the financially constrained scenario is conversion of Rapid service to full BRT. The projected operating costs for the Midterm are shown in Figure 6-8 below.

Figure 6-8 Midterm Service Plan Operating Cost Projection – Financially Constrained Scenario

	Midterm Projection				
	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Boardings					
Fixed Route Service	8,115,074	8,277,375	8,442,923	8,611,781	8,784,017
GET-A-Lift	46,817	47,285	47,758	48,236	48,718
Total Service Hours					
Fixed Route Service	280,000	280,000	280,000	280,000	280,000
GET-A-Lift	32,000	32,000	32,000	32,000	32,000
Operating Costs					
Fixed Route Service	$26,099,931	$26,882,929	$27,689,417	$28,520,100	$29,375,703
Cost/Hour	*$93.21*	*$96.01*	*$98.89*	*$101.86*	*$104.91*
GET-A-Lift	$1,798,096	$1,852,039	$1,907,600	$1,964,828	$2,023,773
Cost/Hour	*$56.19*	*$57.88*	*$59.61*	*$61.40*	*$63.24*
Total Operating Costs	$27,898,027	$28,734,968	$29,597,017	$30,484,928	$31,399,476

Notes and Major Assumptions:

Annual inflation rate for all costs is assumed to be 3%.

Boardings are assumed to grow at approximately the same rate as population, 2%.

GET-A-Lift boardings are assumed to increase 1% annually.

As shown in Figure 6-9, performance measures for the financially constrained midterm scenario steadily improve from the short-term as ridership increases but service hours remain the same. The same fare increase is assumed in the financially constrained scenario as was assumed for the fully funded scenario.

Figure 6-9 Midterm Service Plan Performance Measures – Financially Constrained Scenario

Performance Measures	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Boardings					
Fixed Route Service	8,115,074	8,277,375	8,442,923	8,611,781	8,784,017
GET-A-Lift	46,817	47,285	47,758	48,236	48,718
Passengers per Revenue Hour					
Fixed Route Service	29.0	29.6	30.2	30.8	31.4
GET-A-Lift	1.5	1.5	1.5	1.5	1.5
Farebox Recovery Ratio					
Fixed Route Service	37.3%	36.9%	36.6%	36.2%	35.9%
GET-A-Lift	8.6%	8.5%	8.3%	8.2%	8.0%

Notes and Assumptions:

A fare increase is projected for FY 2020/21. No additional fare increases are projected in the midterm.

Average revenue per boarding was calculated for FY 2010/11 and is equivalent to 60% of the single-ride fare for fixed-route services and 84.4% of the single-ride fare for GET-A-Lift.

For future years, the ratio of average revenue per boarding to single-ride fare price is assumed to remain constant. Increases in average revenue per boarding are thus due to fare increases.

Capital Costs – Fully Funded Scenario

In the fully funded scenario, capital costs are significant with the construction of a new, 26.5-mile commuter rail line to Wasco and seven new park-and-ride facilities. The increase in fixed-route revenue hours also requires the purchase of 13 additional 40-foot coaches. Projected Capital costs for the Midterm Service Plan are show in Figure 6-10 below.

Figure 6-10 Midterm Service Plan Capital Cost Projection – Fully Funded Scenario

Capital Costs	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Replacement and Expansion Vehicles					
Fixed Route Service					
Cost	$25,551,808		$5,963,741		$9,777,987
Number of Vehicles	50		11		17
GET-A-Lift					
Cost	$600,196	$1,730,964			
Number of Vehicles	5	14			
Support Vehicles	$443,623	$0	$0	$114,061	$117,483
Park and Ride Facilities (7 total)	$1,500,000	$750,000	$750,000	$750,000	$2,250,000
Commuter Rail (26.5 miles)	$348,500,000	$0	$0	$0	$0
Total Capital Costs	$376,595,682	$2,480,978	$6,713,752	$864,061	$12,145,487

Notes and Assumptions:

Annual inflation rate for all costs is assumed to be 3%.

Midterm service plan requires 67 fixed-route vehicles plus a 20% spare ratio (14 vehicles).

Vehicle replacements assume a 12 to 14 year useful life for fixed-route buses and 5 years for GET-A-Lift vehicles.

All fixed-route vehicles are assumed to be 40-foot coaches.

Average capital cost for a park and ride facility is assumed to be $750,000.

Commuter rail capital costs are based on an average cost per mile of $9.5 million (2010 dollars) for the Los Angeles Metrolink Perris Valley extension project.

Projected capital costs for commuter rail service are based on the estimated costs for the Los Angeles Metro Link Perris Valley extension project ($9.5 million per mile in 2010 dollars). In the first year, costs are nearly $376 million with 92% of the costs or $348 million attributed to commuter rail costs. Kern COG is undertaking a commuter rail feasibility study, which should provide more detailed cost estimates for future commuter rail service in Kern County.

Capital Costs – Financially Constrained Scenario

Capital costs for the financially constrained scenario are significantly lower and primarily consist of vehicle replacements. No additional vehicles would need to be purchased in the financially constrained scenario. Figure 6-11 below shows the projected capital costs for the financially constrained midterm scenario. First year capital costs are the highest of the five years at $18.4 million to replace 34 fixed route vehicles. Depending on funding availability, GET may decide to spread out these vehicle replacements over several years.

Figure 6-11 Midterm Service Plan Capital Cost Projection – Financially Constrained Scenario

Capital Costs	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Replacement Vehicles					
Fixed Route Service					
Cost	$17,375,230		$5,963,741		$9,777,987
Number of Vehicles	34		11		17
GET-A-Lift					
Cost	$600,196	$1,730,964			
Number of Vehicles	5	14			
Support Vehicles	$443,623			$114,061	$117,483
Total Capital Costs	$18,419,087	$1,730,978	$5,963,752	$114,061	$9,895,487

Notes and Assumptions:

Annual inflation rate for all costs is assumed to be 3%.

No additional fixed-route vehicles are required.

Vehicle replacements assume a 12 to 14 year useful life for fixed-route buses and 5 years for GET-A-Lift vehicles.

All fixed-route vehicles are assumed to be 40-foot coaches.

Funding Strategy – Fully Funded Scenario

All of the funding sources available in the Short-Term are assumed to continue in the Midterm with the exception of Proposition 1B funds. It is also assumed that State TDA allocations continue to increase at an average annual rate of 4%, and that Federal Section 5307 allocations remain constant. Similar to the Short-Term, it is assumed that 65% of the Section 5307 allocation is used for operating and maintenance costs with TDA funds and new sales tax receipts covering the balance.

A new half-cent sales tax is a key source of funding for both operating and capital costs to financially support implementation of the Midterm Service Plan. It is assumed that a countywide new sales tax would generate a total of $1 billion over its 20-year term, with 25% of tax revenues dedicated to transit. Of the $250 million for transit, it is assumed that 25%, or $62.5 million, is set aside for capital expenditures, and 75%, or $187.5 million, is set aside for funding operating costs. While the funding strategy outlined in Figure 6-12 below assumes that both operating and capital funding from the sales tax are spread evenly over the 20-year period of the tax, capital funds could be "banked" over a period of years to pay for large capital projects, or debt could be issued against future sales tax receipts to provide capital funding for projects sooner rather than later.

A detailed funding strategy for new commuter rail service should be developed as part of the commuter rail study currently underway by Kern COG and will need to be refined and updated closer to the anticipated project implementation date. At this time, it is unclear how much federal and state funding will be available for commuter rail projects in the future, meaning that local and regional funds may have to pay for the bulk of the project.

Figure 6-12 Midterm Service Plan Funding Strategy – Fully Funded Scenario

Operating Funding Plan	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Revenue Hours and Costs					
Fixed Route Service	360,000	360,000	360,000	360,000	360,000
Commuter Rail	-	1,020	1,020	1,020	1,020
GET-A-Lift	32,000	32,000	32,000	32,000	32,000
Total Operating Costs	$35,355,151	$37,318,326	$38,437,876	$39,591,013	$40,778,743
Operating Funds Available					
Farebox Revenue					
Fixed Route Service	$9,934,891	$10,391,896	$10,869,923	$11,369,940	$11,892,957
Commuter Rail	$0	$306,000	$314,160	$324,360	$333,540
GET-A-Lift	$155,433	$156,988	$158,558	$160,143	$161,745
Subtotal	*$10,090,325*	*$10,854,884*	*$11,342,641*	*$11,854,443*	*$12,388,242*
Other Misc. Revenue	$200,000	$200,000	$200,000	$200,000	$200,000
Total Operating Revenues	$10,290,325	$11,054,884	$11,542,641	$12,054,443	$12,588,242
Operating Funds Available					
Federal Section 5307	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188
Transportation Development Act (TDA)	$11,751,638	$12,950,254	$13,582,047	$14,223,381	$14,877,313
Local Sales Tax	$9,375,000	$9,375,000	$9,375,000	$9,375,000	$9,375,000
Total Operating Funds	$35,355,151	$37,318,326	$38,437,876	$39,591,013	$40,778,743
Capital Funding Plan					
Total Capital Costs	$376,595,682	$2,480,978	$6,713,752	$864,061	$12,145,487
Federal Funds					
FTA Section 5307 Allocation	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563
FTA Section 5307 Grant	$10,398,172		$2,385,496		$3,958,188
FTA Section 5309 Grant	$15,000,000				
FTA Section 5310 Grant	$100,000	$100,000			
CMAQ/STP Grant	$11,506,878		$2,639,850		$4,380,230
State and Local Funds					
TDA	$5,704,712	$5,204,350	$5,298,741	$5,412,639	$5,544,148
Other State Grants	$15,000,000				
Air Pollution Control District	$1,500,000				
Sales Tax	$3,125,000	$3,125,000	$3,125,000	$3,125,000	$3,125,000
Advertising Revenue	$100,000	$100,000	$100,000	$100,000	$100,000
Other Capital Funds Required	$312,040,356				
Total Capital Revenues	$376,595,682	$10,649,913	$15,669,651	$10,758,202	$19,228,128
Annual Surplus/(Deficit)	$0	$8,168,935	$8,955,899	$9,894,141	$7,082,642
Reserve	*$677,800*	*$677,800*	*$8,846,735*	*$17,802,634*	*$27,696,774*

Notes and Assumptions are at the bottom of the following page.

Funding Strategy – Financially Constrained Scenario

The financially constrained scenario relies on the same funding sources as those used for implementation of the Short-Term Service Plan. It is assumed that TDA funding increases at an annual rate of 4%, while Federal Section 5307 allocations remain constant over time. Both Section 5307 and TDA funds are used to subsidize operating costs and help pay for vehicle replacements as displayed in Figure 6-13.

Both Midterm scenarios project an accumulation of reserve funds toward the end of the period. This assumes that GET will be successful in securing discretionary grant funds to pay for major capital expenses. It also assumes that GET follows a "pay as you go" approach and does not finance large capital projects and incur debt. Any reserve funds that are accumulated should be "banked" to pay for capital projects anticipated in the long-term, or can be used to pay for unanticipated operating or capital needs.

Notes and Assumptions for Figure 6-12 (on the previous page):

Fixed route service levels increase to 360,000 hours per year and GET-A-Lift service remains at 32,000 annual service hours.

Annual inflation rate for all costs is assumed to be 3%.

FTA Section 5307 allocation remains flat, and total TDA allocation increases 4% annually.

New funding includes a 20-year, half-cent sales tax generating $1 billion with 25% (or $250 million) devoted to transit.

For sales tax revenue, 25% ($62.5 million over 20 years, or $3.125 million annually) is set aside for capital investments and 75% ($187.5 million) is used for operations. This translates to $9.37 million per year in operating subsidies assuming evenly spread over 20 year period.

No additional fare increases are projected in the midterm.

Commuter rail service to Wasco would begin in the midterm. Operating costs are an average of operating costs from Altamont Commuter Express ($621/revenue hour in 2010 dollars and escalated to 2021 dollars).

Commuter rail boardings are based on the projected average weekday boardings for the Metrolink Perris Valley extension (44,900 annual boardings per mile).

Commuter rail fare revenue is based on fare revenue per hour reported for the Altamont Commuter Express in 2010 ($210 per revenue hour in 2010 dollars and escalated to 2021 dollars).

Assumes $62.5M available from sales tax over 20 years is approximately $3.125 million per year.

Figure 6-13 Midterm Service Plan Funding Strategy – Financially Constrained Scenario

Operating Funding Plan	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Revenue Hours and Costs					
Fixed Route Service	280,000	280,000	280,000	280,000	280,000
GET-A-Lift	32,000	32,000	32,000	32,000	32,000
Total Operating Costs	$27,898,027	$28,734,968	$29,597,017	$30,484,928	$31,399,476
Operating Funds Available					
Farebox Revenue					
Fixed Route Service	$9,738,088	$9,932,850	$10,131,507	$10,334,137	$10,540,820
GET-A-Lift	$155,433	$156,988	$158,558	$160,143	$161,745
Subtotal	*$9,893,522*	*$10,089,838*	*$10,290,065*	*$10,494,281*	*$10,702,565*
Other Misc. Revenue	$200,000	$200,000	$200,000	$200,000	$200,000
Operating Funds Available					
FTA Section 5307	$3,938,188	$3,938,188	$3,938,188	$3,938,188	$3,938,188
Transportation Development Act (TDA) Allocation	$13,866,317	$14,506,942	$15,168,764	$15,852,459	$16,558,723
Total Operating Funds	$27,898,027	$28,734,968	$29,597,017	$30,484,928	$31,399,476
Capital Funding Plan					
Total Capital Costs	$18,419,087	$1,730,978	$5,963,752	$114,061	$9,895,487
Federal Funds					
FTA Section 5307 Allocation	$2,120,563	$2,120,563	$2,120,563	$2,120,563	$2,120,563
FTA Section 5307 Grant	$7,127,541	$0	$2,385,496	$0	$3,958,188
FTA Section 5310 Grant	$100,000	$100,000	$0	$0	$0
CMAQ/STP Grant	$5,383,969	$0	$2,639,850	$0	$4,380,230
State and Local Funds					
TDA	$3,590,033	$3,647,662	$3,712,024	$3,783,561	$3,862,738
Advertising Revenue	$100,000	$100,000	$100,000	$100,000	$100,000
Total Capital Revenues	$18,422,106	$5,968,225	$10,957,933	$6,004,124	$14,421,718
Annual Surplus/(Deficit)	$3,019	$4,237,247	$4,994,181	$5,890,063	$4,526,232
Reserve	$677,800	$680,819	$4,918,066	$9,912,248	$15,802,311

Notes and Assumptions:

FTA Section 5307 allocation remains flat, and total TDA allocation increases 4% annually.

Fixed route service levels remain steady at 280,000 hours per year and GET-A-Lift service remains at 32,000 annual service hours.

Vehicle purchases are funded primarily by FTA Section 5307 and CMAQ/STP grants.

LONG-TERM SERVICE PLAN COST PROJECTIONS

The Long-Term Service Plan includes a further expansion of fixed-route service hours to 530,000 annually. Two additional commuter rail lines are anticipated in the long-term, and BRT service may be upgraded to Light Rail Transit (LRT). The Long-Term Service Plan represents a financially unconstrained picture of future transit service in the Bakersfield metropolitan area, and thus focuses solely on meeting the mobility, land use and environmental needs of the region with no restrictions imposed by the financial feasibility of implementation.

Operating Costs

Operating costs for the Long-Term Service Plan increase significantly due to the expansion of service hours, potential implementation of LRT, and operation of two additional commuter rail lines. Figure 6-14 shows the projected operating costs as well as passenger productivity for the Long-Term Service Plan.

Figure 6-14 Long-Term Service Plan Operating Cost Projection

	FY 2034-35
Boardings	
Fixed Route Service	11,586,268
Light Rail	4,572,136
Commuter Rail	278,674
GET-A-Lift	53,815
Total Service Hours	
Fixed Route Service	358,472
Light Rail	171,528
Commuter Rail	3,060
GET-A-Lift	32,000

	FY 2034-35
Passengers per Revenue Hour	
Fixed Route Service	32.3
Light Rail	26.7
Commuter Rail	91.1
GET-A-Lift	1.7
Operating Costs	
Fixed Route Service	$50,542,616
Cost/Hour	*$140.99*
Light Rail	$64,645,477
Cost/Hour	*$376.88*
Commuter Rail	$3,976,149
Cost/Hour	*$1,299.40*
GET-A-Lift	$2,719,782
Cost/Hour	*$84.99*
Total Operating Costs	$121,884,024

Notes and Assumptions:

Annual inflation rate for all costs is assumed to be 3%.

Fixed-route (including light rail) boardings for FY 2034/35 are from Fehr & Peer's 2035 LRTP Scenario with Enhanced Speeds for GET services. Light rail boardings assume that Routes 1, 2 and 3 are converted to light rail.

GET-A-Lift boardings are assumed to increase 1% annually.

Fixed route service levels increase to 530,000 hours per year and GET-A-Lift service remains at 32,000 annual service hours.

Assumes that BRT is converted to light rail in the Long-Term. Light rail operating costs are based on Phoenix Metro Rail operating costs of $180 per revenue hour (2010 dollars) escalated to 2035 dollars.

Operating costs for commuter rail service are based on the operating costs for Altamont Commuter Express rail service ($621/revenue hour in 2010 dollars and escalated to 2021 dollars).

Commuter rail boardings are based on the 2010 boardings for the Altamont Commuter Express (35.2 passengers per revenue hour per rail car) and are assumed to increase at the same rate as the general population (2%).

Two additional commuter rail lines are added, tripling total revenue hours to 3,060 annually. All other commuter rail assumptions from the Midterm projections are maintained.

Operating costs for commuter rail are the same as those used in the fully funded Midterm Service Plan. LRT operating costs are based on the hourly operating costs for Phoenix Metro Rail ($180 per revenue hour in 2010 dollars).

Capital Costs

The projected capital costs for the Long-Term Service Plan are shown in Figure 6-15. Total capital costs are projected at over $6.1 billion. The projected long-term capital costs do not account for vehicle replacement or other capital maintenance costs; instead, they focus solely on the costs of implementing new LRT and commuter rail service and new vehicle purchases required by fixed-route service expansion.

Figure 6-15 Long-Term Service Plan Capital Cost Projection

Capital Costs	FY 2034-2035
Additional Fixed-Route Vehicles (33 40-foot coaches)	$25,508,606
Light Rail (32.3 miles)	$5,022,300,000
Commuter Rail (53.5 miles)	$1,064,200,000
Total Capital Costs	$6,112,008,606

Notes and Assumptions:

Annual inflation rate is assumed to be 3%.

Long-term service plan requires 95 fixed-route vehicles plus a 20% spare ratio (19 vehicles).

The size of the GET-A-Lift fleet remains the same through FY 2034/35.

The size of the support vehicle fleet remains the same through FY 2034/35.

Commuter rail capital costs are based on an average cost per mile of $9.5 million (2010 dollars) for the Los Angeles Metrolink Perris Valley extension project.

Light rail capital costs are based on an average cost per mile of $70 million (in 2008 dollars) for the Phoenix Metro Light Rail.

Funding Strategy

Since the Long-Term Service Plan is financially unconstrained, no specific funding strategy is identified. In the future, additional studies will be needed to evaluate the cost-effectiveness and potential fundability of the services outlined in the Long-Term Service Plan.

The following section of this chapter discusses potential new local funding sources that could be used in the mid- and long-term. Furthermore, it is unknown at this time what new Federal or State funding sources may become available in the future.

EXISTING FUNDING SOURCES

Federal Funds

The Federal Transportation Bill which passed in 2005 is known as the “Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users “SAFETEA-LU” and was originally set to expire in 2009; however it has been extended until a new six year federal transportation bill is approved. GET has received funding under all of the programs described in the following section, and it is anticipated that these programs will continue when a new bill is approved in 2012.

The next Federal Transportation Act is likely to provide significantly less funding than in 2005. Current revenues into the Federal Highway Trust Fund are not enough to maintain current levels of funding, and it is unlikely that Congress will agree to an increase of the federal fuel excise tax to provide additional funding.[8]

Section 5307 Urban Area Funds

For urbanized areas with populations over 200,000, funds are apportioned and flow directly to a designated recipient selected locally to apply for and receive Federal funds. GET is the designated grantee in Metropolitan Bakersfield and qualifies for capital funding through Congressional appropriation and budget processes, as administrated by the Federal Transit Administration (FTA). Section 5307 funding apportionments can be used for capital projects and typically fund 80% of the costs. All preventive maintenance and some ADA paratransit service costs are considered capital costs.

GET has received both capital and operating funds under Section 5307, and it is likely that this will continue to be a source of capital and operating funds in the future as well. Annually, GET receives just over $6 million in Section 5307 funds and uses 65% (or nearly $4 million) for regular operating and maintenance costs. These funds are included in the financial strategy presented in this chapter.

Congestion Mitigation and Air Quality Improvement (CMAQ)/Surface Transportation Program (STP)

The program, authorized through the current federal transportation legislation, is available to metropolitan areas that are not in compliance with federal air quality standards regarding ozone or carbon monoxide. These funds are administered locally by Kern COG. GET has benefited from CMAQ funding for vehicle replacements. Since CMAQ is not formula based or guaranteed, GET needs to continue to apply for these competitively awarded funds.

FTA Section 5310 Funds

Section 5310 funds vehicle purchases for Elderly and Disabled transit providers. The State of California manages an annual grant program and although there are no specific formulas to fund specific regions, geographic equity in fund distribution is a goal of the State program. This is a highly competitive program with many agencies throughout the state applying for these funds. GET-A-Lift is eligible for 5310 funds and has received these funds for vehicle replacements and can reasonably expect to receive approximately $100,000 in years when applying for vehicle replacement needs.

State, Regional, and Local Funds

Transportation Development Act (TDA) Funds

For most California transit services, TDA funds are the largest single source of operating revenue; GET is no exception. Between 60 to 75% of LTF subsidizes the cost to operate service. The Local Transportation Fund revenues are derived from a one-quarter cent sales tax, which is collected by

[8] State of California Legislative Analyst's Office, "Transportation Funding Overview" State of California Legislative Analyst's Office, http://www.lao.ca.gov/handouts/transportation/2011/Trans_Funding_Overview_02_28_11.pdf (accessed November 22, 2011).

the Board of Equalization, and administered locally through the Kern Council of Governments (Kern COG) which returns it to local jurisdictions. Since this funding is tied directly to tax revenues that fluctuate with the state of the economy, TDA allocations have not been growing as rapidly in recent years. Therefore, the forecast in this Plan is to assume conservative growth. TDA funds can be used for capital expenditures or operations or a combination thereof, and, importantly, they provide an important source of local match for federal capital funding.

State Transportation Assistance Funds (STAF)

State Transportation Assistance funding is derived from a statewide sales tax levied on gasoline and diesel fuel. STAF are appropriated by the California State Legislature to the State Controller's Office who allocates the funding to planning agencies such as the Kern COG. State law specifies that STAF be used to provide financial assistance for public transit, including capital programs and operations.

However, in an attempt to balance the State's financial problems, the Governor suspended the State Transit Improvement Fund for five years. This action began in 2008-09 and will continue, unless alternate financial means become available. The estimated annual financial impact is approximately $2.3 million dollars. Lost funding reduces the opportunity to increase transit service or to acquire more buses. The action clearly demonstrates transit's role in relation to all state-funded activities.

Proposition 1B

Proposition 1B, also known as Public Transportation Modernization, Improvement and Service Enhancement Account (PTMISEA) was approved by voters as Proposition 1B on November 7, 2006. Passage of the Proposition allowed the State of California to see bonds for capital infrastructure improvements for transportation related projects. They are intended to advance the State's policy goals of providing mobility choices for all residents, reducing congestion, and protecting the environment. GET has used this fund source to help pay for capital expenses. Nearly all Proposition 1B funds are obligated at this time and no additional funding is expected to be available after FY 2016/17.

San Joaquin Valley Air District

Kern County is one of the eight counties within the San Joaquin Valley Air Pollution Control District. The District provides funding through "REMOVE II" for several programs including the Vanpool Voucher Incentive Program, EE-Mobility Telecommunications Component, Alternative Fuel Vehicle Mechanic Training Component and a Public Transportation Subsidy and Park-and-Ride Lot Component. The Public Transportation Subsidy component funds Park-and-Ride Lot construction/expansion and is the source applied for to pay for the new transit center at CSUB.

POTENTIAL NEW FUNDING SOURCES

The primary existing funding sources are Federal Transit Administration (FTA) Section 5307 and TDA Article 4. Formula funds are projected to remain constant or even decline in the short-term. Discretionary funds are competitive and are not guaranteed and tend to be used for capital improvement projects. No new federal or state funds are anticipated even with reauthorization of the new federal transportation bill expected in 2012. In this current economic climate of fiscal austerity it is challenging for GET to fund its current operations and planned capital improvement

projects. For this reason, new funding sources are needed for GET to pay for the Mid- and Long-Term Service Plans.

Potential funding sources that GET can pursue to supplement transit service and pay for capital investments are presented in Figure 6-16. The figure first presents new federal funding opportunities followed by potential new revenues derived from state, regional and local sources. It then reviews opportunities for generating private funds. For each funding source identified in Figure 6-16, its purpose is stated, how funds can be used and applicability for GET's service needs and capital requirements. Some of the revenue sources are currently being explored by GET and Kern County although there are no firm commitments at this time.

Figure 6-16 Potential Funding Sources

Program Fund Source	Funding Purpose	Allowable Use of Funds	Applicability for GET Service and Capital Enhancements	Comments
Federal Fund Sources				
FTA Section 5309 Capital Program (Congressional Earmarks)	Provides Federal funds for bus and bus facilities and New Rail Starts	Transit capital projects	Potential for funding replacement vehicles, new transit centers and future BRT capital requirements	Work with Congressional delegation to secure federal funding for high priority large-scale capital projects in the transportation bill (2012). Projects may be positioned to receive "earmarks" in the next funding cycle if they are high profile and have local and regional support.
FTA Small Starts	To fund corridor based bus projects that cost less than $250M, and no greater than $75M	Transit capital projects	Potential for funding BRT or LRT capital investments	Small Starts funding is very competitive, and has high administrative and reporting requirements. Projects with transit supportive policies, economic development and strong local commitment are strong competitors.
FTA Section 5316 Job Access and Reverse Commute (JARC) Program	Provides funding for local programs that offer job access for low-income individuals	50% of operating costs and 80% for capital costs	Potential for new service that is oriented for low income residents to travel to work sites	JARC funds are distributed to states on a formula basis, depending on that state's rate of low-income population, and then are awarded within the state following a competitive process.
FTA Section 5317 New Freedom Program	To support new public transit services beyond ADA requirements;, including transportation to and from employment	50% of operating costs and 80% for capital costs	Potential for new service that is oriented to people with disabilities to overcome barriers for traveling to work sites	New Freedom funds are distributed to states on a formula basis, and then are awarded within the state following a competitive process.
TIGGER (Recovery Act)	Federal funding program for transit agencies pursuing projects to reduce energy consumption or greenhouse gas emissions.	Capital projects only	Potential for vehicle replacements or other capital Infrastructure improvements	This program was part of the 2009 American Recovery and Reinvestment Act. It is unclear if this program will be part of a reauthorization of the Federal Transportation Act.

Program Fund Source	Funding Purpose	Allowable Use of Funds	Applicability for GET Service and Capital Enhancements	Comments
State, Regional and Local Fund Sources				
Safe Routes to School Grant Funding Program	Projects to increase safety and accessibility for students to use sustainable forms of transportation to get to school	Capital projects only	Funds could be used to pay for infrastructure improvements	GET could partner with school districts and submit a SRTS grant application for infrastructure and other related improvements
Proposition 1B Public Transportation Modernization, Improvement and Service Enhancement Account (PTMISEA)	Projects are for reducing congestion, and protecting the environment	Transit capital projects	Funds could be used to pay for replacement vehicles and infrastructure improvements	GET has applied for $7 million in PTMISEA funds for vehicle replacements in FY 2013/14. Although most funding has been obligated, there may be opportunity to secure additional PTMISEA funds in the next one-two years.
Vehicle Registration Fee (VRF) -SB 83 was signed into law in October 2009.	This law authorizes a countywide transportation planning agency to propose an annual VRF of up to $10 on motor vehicles registered within the County. The revenue generated would be used for specific transportation programs and projects identified in an Expenditure Plan	VRF may only be used to pay for programs and projects that bear a relationship or benefit to the owners of motor vehicles paying the fee and are consistent with a regional transportation plan.	Fees shall be used to fund projects and programs that improve existing transportation infrastructure or provide alternatives to driving	Kern COG can elect to place a VRF before the voters. It would provide Kern County the opportunity to obtain a dedicated local funding source for transportation improvements that benefit or mitigate the automobile. The measure must be approved by a majority of voters.

Program Fund Source	Funding Purpose	Allowable Use of Funds	Applicability for GET Service and Capital Enhancements	Comments
Sales Tax Measure (countywide tax dedicated to transportation purposes known as self-help counties)	Self-help counties generate sales tax revenues to fund high priority transportation projects such as streets/roads improvements, transit enhancements or other projects of significance in Kern County	With the passage of a local sales tax measure, an Expenditure Plan lists all transportation related projects and programs that are to be funded with sales tax revenues.	An Expenditure Plan in Kern County could include transit improvements such as BRT, new transit center or other projects or programs that resonate well with the voters	Measure I, a half-cent sales tax increase that would have raised $1 billion for transportation improvement projects was not approved by two-thirds voter majority in Kern County in 2006. Since self-help counties have control over locally raised sales tax revenues, they can influence the types of transportation projects that benefit their residents.
Parcel tax	A parcel tax is a tax on property owners for specific purposes, such as road maintenance or transit improvements. As with all specific purpose taxes, a parcel tax would require a 2/3 majority vote.	Revenues can be used for any allowable purpose under the enabling legislation	Tax revenues can be used to support operations or for capital investments	A number of transit agencies in California use parcel taxes to help fund their services. For example, AC Transit in the San Francisco Bay Area levies an annual per parcel tax. Total annual revenue from the parcel tax is approximately $65 million. The Bay Area Rapid Transit District (BART) assesses each parcel in the district an ad valorem tax as opposed to a fixed annual amount.
Transportation Impact Fee	This is a one-time fee on new residential and non-residential development to mitigate impacts from increased congestion	Primarily capital projects; also operations in some situations Like all developer fees, transportation fees must show a nexus between the development and specified improvement or service provided.	Kern County and Bakersfield have existing impact fees on new development; their focus is LOS such as increased roadway capacity and traffic signals. The fee would need to be revised to include transit as an acceptable mitigation.	Depending upon the rate of new development approvals, this could be a good source of funds for transit capital projects, especially those linked to infrastructure improvements along major corridors. With the passage of AB 147 this year, transportation mitigation impact fees now include transit, bicycle and pedestrian facilities in addition to road improvements.

Program Fund Source	Funding Purpose	Allowable Use of Funds	Applicability for GET Service and Capital Enhancements	Comments
Private Sector Sources				
Public/Private Partnerships	Direct or in-kind contributions can provide important marginal support for transit services. Public/private partnerships can increase overall funding by leveraging "outside" dollars	Flexible	Support operations and/or pay for capital improvements	Examples of public/private partnerships are presented for universities colleges, retailers and employers. These include a U-Pass Program and Eco Pass. Other possibilities include hospitals, and other institutions. Public/partnerships can be effective to fund shelter installation and maintenance.
University Pass (U-Pass) Program	To increase transit ridership and offer services to students, faculty, and staff at a discounted or "free" fare. To cover costs incurred by the university, a student transit fee is charged as part of regular tuition or other fees	Formal agreements between transit agencies and universities structure method of payment, typically based on annual boardings. Goal is to ensure the transit agency is getting its "fair share" of revenue and university is receiving good service and a discounted fare.	For additional information on U-Pass agreements including case studies, please refer to Chapter 3.	GET is in the process of exploring a partnership with CSUB and Bakersfield College.
Universal Transit Passes	To provide unlimited rides for low monthly fees, absorbed entirely or partially by employer, school, or developers.	Flexible –helps fund service improvements especially to employers, schools or entities contributing funds.	Can be an effective way to provide a stable source of income with large employers such as government offices in Downtown Bakersfield, Memorial Hospital, and the State Farm Insurance Operations Center.	The principle of employee or residential transit passes is similar to that of group insurance plans – transit agencies can offer deep bulk discounts when selling passes to a large group, with universal enrollment, on the basis that not all those offered the pass will actually use them regularly.

Program Fund Source	Funding Purpose	Allowable Use of Funds	Applicability for GET Service and Capital Enhancements	Comments
Retail and Merchant Contributions	Retailers may share in the cost of transportation improvements especially if one-time capital improvements or contributions.	Flexible	Primarily capital projects; also operations in some situations	May require agreement between GET and private interests – public/private partnerships.
Employer Contributions	Employers may share in the cost of transportation improvements if beneficial to their employees.	Flexible	Primarily capital projects; also operations especially to subsidize transit passes	Employers sometimes are willing to underwrite transportation to support their workers getting to/from worksite. IKEA currently funds a significant portion of Route X92 operating costs.
Bus Stop Sponsorships	Although not necessarily a large revenue generator, GET could consider sponsorships at bus stops and even on buses.	Bus Advertising	Primarily capital	Portland Streetcar has a major private sector bus sponsorship program that generates approximately $250,000 per year. For bus stop signs, businesses pay $500 per month for each stop. In return, the business has their name posted at each end of the shelter, an audible announcement of the business over the Streetcar communication system at the sponsored stop location(s) as well as their name printed on brochures.
Partnerships with Advertising Agencies	To increase operating revenue and/or provide passenger amenities	Flexible	Could be an effective strategy for GET to partner with the private sector for a small but important element of its infrastructure	AC Transit and MUNI in the San Francisco Bay Area have contracts with ClearChannel to provide shelters and other passenger amenities. Another option is to sell advertising on buses – either panels or bus wraps.
Assessment Districts (Mello-Roos) A property-based improvement district (PBID) collects money from property owners rather than business owners.	Local jurisdictions may form a district and levy a special tax after a 2/3 vote of the property owners. A Mello-Roos special tax provides more flexibility than an impact fee because it does not require that the levy be linked to benefits received.	The taxes may be used to fund a wide variety of infrastructure needs including transit. The revenues can be used for maintenance and operations.	There are *no* transit or transportation special assessments in Bakersfield or Kern County. Once established, the District could advance public/private funding for any strategy provided it benefits residents within the District boundaries.	Business owners often initiate the process to establish an assessment district. However a City Council resolution must establish the intent and activities and its proposed boundaries.

SUMMARY AND CONCLUSIONS

In the short-term, the service plan is fully funded assuming the existing fund sources continue to be available and GET successfully secures capital grants for vehicle replacements and infrastructure needs such as new transit centers. If capital grants are not forthcoming, then GET may need to postpone some of the scheduled vehicle replacements and may not be able to construct or upgrade transit centers. There are no funding commitments for a fully operational BRT system scheduled to begin in the midterm (FY 2020/21). The Midterm Service Plan depends on additional local revenues to support expanded bus service and introduce rail service.

To help pay for capital improvement projects, GET is encouraged to seek discretionary capital grants to cover a portion of BRT infrastructure needs and other rail investments. However, given the current fiscally constrained environment in the near future and possibly longer-term and the competitiveness of discretionary capital funds, it is not realistic to expect that government funding alone will be sufficient. GET, working collaboratively with Kern County and other jurisdictions will need to generate local revenue sources. The most promising potential is a countywide half-cent sales tax for transportation improvements with a percentage of the revenues dedicated for transit.

The Long-Term Service Plan is financially unconstrained. To make this plan a reality will require more careful evaluation of projects closer to implementation to determine the most cost effective option and to develop a viable and sustainable funding strategy.

7 IMPLEMENTATION AND NEXT STEPS

This Long-Range Plan is a roadmap for future investments. To implement the plan in Metropolitan Bakersfield requires a wide range of activities. While GET staff would lead most of these activities, the process will require involvement by Kern COG, KRT, the City of Bakersfield and other agencies in the Metropolitan area.

This chapter discusses the steps that GET might take to implement recommendations in the plan, and the sequence in which they could be carried forward. At the conclusion of this chapter are recommended transit policies to support increased transit ridership and preserve the livability of Bakersfield.

PHASING SCHEDULE

Figure 7-1 presents a summary of the recommended service plans for the short, mid and long-term and an approach to phasing them. It should be noted that this is not a comprehensive schedule of exactly what type of service will be implemented and when, but allows for the development of a Financial Strategy (See Chapter 6) to support the recommended service improvements. Ultimately, GET may shift some service enhancements to earlier or later time frames, or implement selected services as part of a pilot program based on new funding opportunities.

WHAT ARE THE MAJOR TASKS TO IMPLEMENT THE SHORT-TERM SERVICE PLAN?

To provide a sense of the magnitude of the implementation effort, the following is a list of the major tasks that have been identified for the introduction of the recommended short-term service plan assuming a planned start-up in July or September 2012. Ultimately, these tasks would need to be refined by GET staff as they begin to be implemented and refined. The headings used here are to assist GET in organizing the diverse range of tasks. These are described further in each of the following subsections.

Service Planning

- Plan Refinement
- Key Implementation Considerations
- Monitoring After Implementation

Operations

- Final Running Times for Planned Service Changes
- Driver Training
- Start of New Service

Bus Stops and Facilities

Marketing/Public Information

- System Identity
- Signage
- Information Resources
- Advertising

Figure 7-1 GET Long-Range Service Plan Proposed Phasing

	FISCAL YEAR										
	Short-Term								Midterm		Long-Term
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2025	2035
Detailed Planning for Short-Term Service Plan											
Short-Term Service Plan Implementation											
Refine/adjust service as needed											
Monitor service, ridership impacts, etc				→	→	→	→	→			
Financial Planning											
Implement Fare Increase											
Pursue Capital Discretionary Grant Funds											
Pursue private sector partnerships		Ongoing							→	→	→
Explore local revenue opportunities(sales tax, vehicle registration fee, etc)									→	→	→
Capital Planning											
Coordinate with BC on New Transit Center											
Plan for new CSUB Transit Center											
Plan for Southwest Transit Center Replacement											
Plan for rehabilitation of Downtown Transit Center											
Plan and Implement BRT capital infrastructure (TSP, queue jumps, side running transit lanes, etc.)											
Midterm Service Plan Implementation											
Prepare for and implement BRT											
Implement Midterm Service Plan											
Monitor service, ridership impacts, etc											
Refine/adjust service as needed											
Conduct detailed commuter rail feasibility analysis											
Implement Commuter Rail (if financially feasible)											
Conduct an alternatives analysis for BRT corridors to determine whether upgrade to LRT is warranted											
Long-Term Service Plan Implementation											
Prepare for and implement recommendations from alternatives analysis											
Implement Long-Term Service Plan											
Implement recommendations from commuter rail feasibility analysis											
Ongoing monitoring of service, ridership, etc.											

SERVICE PLANNING

Several steps are identified to successfully implement the proposed Short-Term Service Plan:

- **Plan Refinement.** Some changes to the plan may be required as GET Staff refines the service schedule and bus stop spacing and other details such as coordinating with the City of Bakersfield. KRT, CSUB and Bakersfield College.
- **Achieving Plan Implementation.** Several steps are required to receive adequate public input on new services before they are implemented. Several outreach activities have already taken place and based on feedback, the service plan has been revised to reflect public opinion and operator comments. However, GET Board needs to adopt the Plan and direct staff to proceed with implementation.
- **Monitoring after Implementation.** Once the new service is implemented, performance should be carefully monitored. Performance should be compared to the recommended performance standards with the understanding that it may take as much as two full years to achieve desired performance levels.

Plan Refinement

Plan refinement is an important detail to ensure that the plan details are understood by all GET staff. Some tasks, such as implementing bus stops and developing service schedules and running times, are critical steps. Although the consulting team worked closely with staff and stakeholders in Metropolitan Bakersfield, it is advisable to confirm community support and buy-in by the City of Bakersfield, Kern County and major institutions like CSUB and Bakersfield College. For example, the new transit center proposed at CSUB will not be constructed for some time, so in the meantime it will be important to coordinate with CSUB as to how best to locate stops and provide service to the campus.

The Public and GET Board of Directors

The GET Board will review and accept public comment and make any final refinements for the eventual implementation of the Short-Term Service Plan as well as the service plans for the mid- and long-range time horizons.

The public has had an opportunity to review and comment on the recommendations. The Short-Term Service Plan has been refined to reflect comments and feedback. However, this is a long-range plan and GET will need to conduct additional analysis before making final decisions on a course of action for the Midterm and Long-Term Service Plan and secure increased funding. A number of other factors need to be considered such as:

- Increases in bus ridership
- Further reductions in funding for transit due to economic circumstances or other unforeseen cutbacks
- Significant increases in available funding
- New fast-track developments in areas not currently programmed for development

Public Hearings and Service Modifications

In developing this plan, GET staff has made an effort to address concerns of elected officials, the public and GET operators. There are, however, opportunities for further concerns to arise and it may be necessary to make some modifications to the recommended Short-Term Service Plan.

Although not anticipated, it is possible that major concerns could be raised by large numbers of people. If this occurs, then staff should ask: "Can the concern be resolved in a way that does not compromise the key principles of the plan? " If yes, then GET staff should develop a proposed change to the plan that resolves these concerns. If the answer is no, staff should develop a proposed change, but should first ask the GET Board whether it wants to

- Reverse the plan's basic principles, goals or performance standards to make the change,
- Refuse to make the change, or
- Make an exception to the principles, goals and performance standards solely for the concerned party.

Staff should present these issues. Each issue should have a potential resolution and a clear description of whether that resolution is consistent with the principles, goals and objectives, and whether that resolution creates other problems that could generate other complaints. Additional testimony at a public hearing may raise new issues. Beginning the public hearing with a presentation of issues already raised can help reassure attendees that they have been heard. This can allow them to focus their testimony on possible solutions and the real tradeoffs these solutions imply.

When the GET Board is prepared to make a final decision about changes to the Short-Term Service Plan, there are four key options:

1. **Adopt the plan as proposed** and direct staff to implement it. GET staff recognizes that some small issues may be unresolved.
2. **Adopt the plan with specific changes**. Each change would be studied by GET staff and could be implemented. This choice could result from a new issue raised in the public hearing process that the Board feels must be addressed. If the issues remaining are small, it still may be possible for staff to address them quickly and present a revised plan for final adoption to meet the target implementation date. Every effort has been made during the public outreach process to reduce the likelihood for surprises when the Board makes its decision.
3. **Adopt the plan in sections or as part of a phased implementation process**. For example, GET may wish to implement specific services without implementing others. This would not necessarily represent a shift from the Plan's key recommendations, but allows GET staff and the Board to select the most critical elements for implementation.
4. **Shelve the plan** and elect not to implement the recommendations. In this case, the Board should revisit the guiding principles, goals and objectives to give staff direction toward developing new service recommendations for future implementation. Since the Board has participated throughout the planning process, outright rejection of the plan should be a last resort.

Key Implementation Considerations

To implement the recommended service, there are a number of considerations listed below.

Ridership and Customer Service Impacts

Ridership may not achieve desired results in the first months of redesigned or new service, but this does not indicate failure. Typically, it takes several months before ridership starts to build as the benefits of the new service are noticed.

In some communities, complaints will arise with the implementation of new service. This does not suggest a lack of success. Those who benefit from the recommended services may begin using the service gradually. Negative feedback is always louder than positive feedback in the wake of the service change, regardless of the overall benefit of the change to the community. Ridership, after several months, is a better indication than public comment regarding whether new service is succeeding.

Further Service Revisions

Ridership resulting from new service patterns can take two years to develop, and a complete cycle of seasonal variations must also be observed.

There are only three reasons to make service changes in the first year of a major new service implementation:

- **Cycle Failure.** If a line is failing to cycle in the scheduled amount of time, causing timed connections to be missed or providing inadequate driver breaks, service may be streamlined to eliminate this problem. To minimize the chances of this occurring, GET should conduct field testing against the schedule.
- **Safety.** As always, a safety problem should be corrected immediately. Before implementation, GET staff will try to minimize the chances of this by extensive field-testing of the plan, and should continue to monitor for safety during implementation steps such as the placement of bus stops. However, some safety issues are not foreseeable, such as those arising from land use activities that may affect bus stops or movements.
- **Overloads and Pass-ups.** If buses are overloaded beyond GET's standard, and if buses must pass up passengers due to lack of space, immediate corrective action is required. GET passengers must have complete confidence that they will be able to board the services of their choice. Exceptional pass-ups can be covered by the "extra board" of spare drivers and vehicles, or by spare paratransit capacity. Chronic pass-ups may require corrective action such as additional service.

Monitoring After Implementation

Once the new service is in place, performance should be monitored. Close attention should also be given to running times, to ensure that the routes are cycling as planned. Small schedule adjustments, such as shifting a few minutes from one time point to another, are sometimes in order after three months of observations. However, as noted above, no significant changes should be made for one year except in cases of cycle failure, safety problems, or overloads and pass-ups.

Determining how successful a service change is should be based on a review of many service performance factors over a one- to two-year period. These factors include items recommended to be monitored, such as ridership, passengers per hour, and farebox recovery.

OPERATIONS

A critical part of implementation focuses on operational issues, described in further detail in this section.

Final Running Times for Recommended Service Implementation

Running times were initially developed for each route to identify vehicle requirements for operating at modeled headways and to calculate annual service hours. Route testing with buses will be required to:

- Finalize running times for the development of accurate route schedules.
- Establish outbound and inbound deadhead times.
- Set time point references.
- Test the feasibility of turns, planned bus stop locations, transit center circulation, and operations along all new corridors.

Prior to route testing, planned bus stop locations must be established and mapped for testing. Time points must be established as references for the recording of route segment timings. Operator/road supervisor teams should carry out route testing with buses. For each team, the operator should drive the bus according to established testing protocols while the road supervisor records running times between the time points. With operator input, the road supervisor will evaluate, and record observations regarding operating safety and feasibility along the route. Formal route testing offers an opportunity to fine tune routing and operating instructions.

Suggested route testing protocols include:

- The uninterrupted testing of each route as the bus would be operated in actual service.
- All tests would be conducted with buses designated as “Out of Service” and no passengers would be picked up.
- The operation of buses at normal GET operating speeds for all types of roadway conditions.
- Test buses should stop at every third bus stop and dwell approximately 15 seconds to simulate passenger boardings and alightings.
- A minimum of three passes should be made along each route in both directions, including AM peak, midday and PM peak passes. The average of the three recorded times in each direction will provide an accurate running time for the establishment of route schedules. Common sense and operations staff experience should guide the final setting of route segment running times.

Running times should also be recorded for all required deadheading.

Operator Training

Operating personnel require the knowledge and technical skills to implement GET's policies and procedures for the safe, reliable and courteous operation of transit vehicles. Particularly essential, but not often covered in basic operator training programs are human relations skills to assist in dealing with passengers.

Operator training and orientation is critical to the effective ongoing operation of transit service and for the introduction of new services. New services and service changes should be reviewed with operators so that they can both implement the changes and assist their customers in adjusting to the changes. The implementation of the Short-Term Service Plan recommendations offers a strategic opportunity to introduce an enhanced operator-training program.

Start of New Service

The following are the key planning and operations steps that must be completed before any of the recommended services are carried out:

- Final approval of the Long-Range Transit Plan
- Establishment of a workable implementation plan and schedule.
- Establishment of marketing, outreach and staff orientation plans.
- Finalization of service goals, objectives, policies, performance standards and design criteria.
- Finalization of bus stop locations.
- Finalization of transfer points as well as connections to KRT services.
- Route testing and finalization.
- Bus stop sign installation and curb painting.
- Destination sign updating.
- Scheduling and shift design.
- New operator paddles/instruction sheets.
- Staff orientation workshops.
- GET system brochure update and production.
- Implementation of marketing and outreach (public meetings, press releases, public notices/revised service maps in newspapers and outreach at major transit facilities).

BUS STOPS AND FACILITIES

When locating bus stops, consideration should be given to safe and feasible bus operations, the minimization of walking distances for the majority of passengers, pedestrian safety (good pedestrian/vehicle separation – pedestrian signals, crosswalks and sidewalks), and the minimization of bus stop interference with the flow of traffic.

For placing bus stops and facilities, the following steps are recommended:

- The spacing and location of new bus stops along the proposed routing.
- The measurement of bus stop lengths and staking of transit and “no parking” signage.
- Notification to affected property owners.
- Route testing and bus stop site adjustments.
- Installation of signage and waste containers. (signs must be bagged until implementation of the new service)
- Curb painting near to or following the implementation of the service changes.

The next set of steps would take place prior to the implementation of the service changes while actual installation could take place after implementation. These include:

- The establishment of a bus stop bench and shelter installation policy.
- The establishment of a near and long-term bus stop enhancement capital program.
- The annual improvement of bus stops on a prioritized basis.

MARKETING/PUBLIC INFORMATION

Marketing provides information to the public about available transportation services. Transportation marketing is primarily about providing good information to assure users that they have made the right decision to ride public transit. Another important emphasis of transportation marketing is to attract new riders. Promotional materials, activities and special events are secondary to the quality of information provided, but can boost ridership and awareness of the transit system. These special means of promoting transit service also can heighten the level of interest in the enhanced service.

GET has an excellent marketing program and outreach program. Implementation of the recommended long-range services provides an opportunity for GET to build upon its successes: marketing strategies and actions should improve the visibility and showcase the benefits of transit services provided in Metropolitan Bakersfield. Four key elements that should be considered as part of the implementation of the recommended services include the following:

- System Identity
- Signage
- Information Resources
- Advertising

System Identity

To promote ridership and the coherence of any transit effort, visual identity is important. When people can easily identify the buses, they are reminded that transit might be available to take them to their destination and they may seek information about how to use it.

Signage

It is important to maximize the casual marketing value of information services such as signage. Information sources should always present the necessary information as clearly and concisely as possible. Ultimately, clear information is the best marketing.

- **Signs on the Buses and Trains.** Signs on vehicles are especially important because they allow the service to advertise itself.
- **Signs and Amenities at the Key Bus Stops and Amtrak Station.** Informative bus stops provide an invaluable ongoing marketing function. Comprehensive bus stop signs show people who are not familiar with GET that it exists and might be available to them. They also reassure riders that they are at the correct location. GET bus stop signs should be clear, and should include the system name and logo. Ideally, they should also include route and schedule information.

Information Resources

Printed and Telephone Information

Providing information to better serve the customer is one of the key tenets of transit marketing. In addition to a brochure, quality telephone information is necessary to inform customers about available services and answer questions for regular customers. Telephone service also allows for troubleshooting when necessary. In addition, GET should consider advertising its telephone number on buses, signs, the brochure, in any print advertisements and on bus passes/tickets. This ensures that individuals with questions about GET always have access to a number to call.

Internet

GET recently revamped its website. It includes maps, service information, service changes and special events information. The site should be maintained regularly and information should be updated as new services are implemented. The site address should be listed and advertised on all GET publications and news releases, as well as on the bus. If GET introduces any new technologies such as real-time information, the web site could be used as a portal to share this information with the public (for example, a way to monitor where buses are, when the next bus will arrive, etc.).

Advertising

A comprehensive information and advertising campaign is recommended in advance of introducing the new route structure. GET's goal in advance of introducing the new service should be to blanket the community with information about the new service.

RECOMMENDED TRANSIT-SUPPORTIVE POLICIES

The goal of improving transit ridership can be supported through improvements to the physical environment in Bakersfield and also enhancing stops in outlying rural areas.

Land use, transportation, and urban design (the design of streets and open spaces and the way that development relates to these public spaces) all impact the potential ridership of a transit system. Are enough residents and jobs in close proximity to transit service? Do streets allow for good circulation for transit vehicles and safe access to and from transit for pedestrians? Are streets and new developments designed in such a way that will encourage people to travel on foot, on bike, or on the bus?

With the implementation of service improvements and an enhanced transit network, there is a good opportunity to establish policies and a framework for the built environment and the growing areas in Bakersfield. Currently, some areas of Bakersfield have elements that could make them transit-supportive, but they are missing other elements. For example, the Downtown Transit Center is some distance from employment and retail and nightlife destinations and lacks good pedestrian facilities. Adjacent parcels are somewhat underutilized and the quality of pedestrian connections is mixed. Other portions of Bakersfield have thus far developed in a way that does not support transit ridership, including agricultural, industrial and commercial operations that are located on the outskirts of Metropolitan Bakersfield and residential development west of Highway 99. These areas lack development intensities and pedestrian circulation improvements that are necessary to create a truly transit-supportive environment. While demand for more transit service may occur, it could be even greater with changes in development patterns and more careful planning. The character of improvements will be different depending on the

surrounding context. There is no "one-size-fits all" pattern when it comes to creating a transit-supportive place.

Principles

Three principles and concepts provide a framework for evaluating existing built and policy conditions in the region and ways to make improvements in the future:

- **Support transit use at the local level and on a regional scale**. Potential transit ridership and multi-modal opportunities should be considered in planning new growth areas, developing land use policies for existing developed areas, and planning for major infrastructure investments. The focus should be on improving the form of the region with particular emphasis on enhancing pedestrian activity in and around downtown Bakersfield and other potential sites such as adjacent to CSUB.
- **Focus development and infrastructure on key cores and corridors.** Transit ridership will be highest when it effectively serves key origins and destinations. Transit becomes an attractive alternative to the automobile when it is accessible, convenient, and efficient. In order to maximize the attractiveness of transit, service should be focused on major corridors such as Chester, California, Mt. Vernon and Ming and the Niles and Monterey corridor. Accompanying land use and infrastructure policies should encourage more intense development and improved accessibility for all travel modes in these areas. New growth areas, as they become necessary to accommodate regional population growth, should be developed using these same principles.
- **Design streets and new developments to foster street activity and encourage transit use.** Streets are the centers of activity for transit-oriented districts, they are the civic spaces where people walk to transit and support the public life of the districts. Street activity can be generated by increased land use intensity and through-street designs that provide comfortable access for all modes of travel. Street improvements such as sidewalk widening, street tree planting, and providing pedestrian lighting can be coupled with land use changes to maximize the benefit of public infrastructure investments, and the pairing of these decisions will result in comprehensive and complementary planning of land uses and transportation systems.

Policies

Recommended policies address issues of land use, circulation, and urban design. The coordination of these three aspects of form and function are essential in order to support increased transit ridership and preserve the livability of Bakersfield.

Land Use

The land use criteria are intended to measure the ability of land use policies to support the goals of this Long-Range Transit Plan.

- **Land uses should be mixed both horizontally and vertically.** Vertical mixed use, with ground floor retail in developed areas and activity centers as identified through land use plans, can increase the vitality of the street and provide people with the choice of walking to desired services. More important for Bakersfield, mixing uses horizontally can prevent desolate, single-use areas, and encourages increased pedestrian activity; scale of

use and distance between uses are important to successful horizontal mixed-use development.

- **Support and enhance major activity centers.** Activity centers have a strong impact on transportation patterns as the major destinations in the city. They are generally characterized by their regionally important commercial, employment, and service uses. To make these places more transit-supportive they should be enhanced by land use decisions that locate new housing and complementary neighborhood-scale retail and employment uses to diversify the mix, creating an environment that maximizes transportation choice.
- **Land use intensities should be at levels that will encourage use of transit and support pedestrian and bicycle activity.** A general threshold for transit-supportive residential uses is 10 to 15 units per net acre for high-frequency bus transit. This density can be lower, however, if the urban environment supports pedestrian access to transit. Commercial and employment/education uses with high employment densities (e.g., CSUB and area west of Highway 99 support more transit use than do those with lower employment densities (e.g., industrial or warehousing). Extensive areas of retail tend to be auto-dominated if not scaled appropriately and mixed with other uses, such as Stockdale Fashion Plaza or the Wal-Mart supercenter. Non-residential uses with a Floor Area Ratio (FAR) of 0.5 provide a baseline that can support transit ridership. While there is little empirical research available to link employment density with transit ridership, the general "rule of thumb" is to maximize the intensity of development given market conditions and to make certain that the transit network provides high-quality service to areas with concentrations of employment uses and retail services.
- **Parking requirements (and parking provision) should be compatible with compact, pedestrian and transit-supportive design and development.** Requirements should account for mixed uses, transit access, and the linking of trips that reduce reliance on automobiles and total parking demand.

Circulation and Connectivity

Transit and transportation systems need to provide a balance of hierarchy and integration between and amongst modes. The circulation system facilitates access and safety for all travel modes, with particular attention to pedestrian and bicycle access, as these modes support transit ridership.

- **The transportation and circulation framework should define compact districts and corridors** that are characterized by high connectivity of streets to not overly concentrate traffic on major streets and to provide more direct routes for pedestrians, good access to transit, and streets that are designed for pedestrians and bicycles, as well as vehicles.
- **New residential developments should include streets that provide connectivity.** Cul de sacs and walls around communities are especially challenging for providing effective public transit.
- **Transit improvement projects should be targeted at areas with transit-supportive land uses** (existing and planned), in and around key destinations and projects that can increase pedestrian activity.

Urban Design

High quality urban design, including street and building design, can support increased transit use and pedestrian and bicycle activity. An important evaluation criterion is the extent to which the plans provide guidelines or standards to achieve the desired urban design character in a particular community.

- **Streets should be designed to support use by multiple modes,** including transit, bicycles, and pedestrians, through proper scaling and provision of lighting, landscaping, and amenities. Amenities must be designed to provide comfortable walking environments.
- **Buildings should be human scaled,** with a positive relationship to the street (including entries and windows facing onto public streets, and appropriate articulation, signage, etc.).
- **The impact of parking on the public realm should be minimized** by siting parking lots behind buildings or screening elements (walls or landscaping). Buildings should be close to the road so parking can be located on the side or in the rear.

Roadway Level of Service Standards

- **Relax Roadway Level of Service (LOS) standards in high-priority transit corridors.** In high-demand, high-capacity transit corridors – specifically, the Lines 1 and 2 Rapid alignments identified in the Short-Term Plan, where service is proposed to be upgraded to bus rapid transit – it may be desirable, even necessary to reduce minimum standards for intersection level of service, or LOS. There has been some discussion already of site-specific relaxations of the existing City of Bakersfield standard of "C" related to adjacent transit-oriented developments. If traffic lanes along major arterials such as Chester Avenue and California Avenue were to be set aside for exclusive use by transit vehicles, congestion might result at some locations exceeding the existing threshold for mitigation. In these cases, mitigations could be pursued, but it might not always be possible or even desirable to implement typical mitigations such as additional turn lanes, as such measures can sometimes impinge on the pedestrian realm or even adjoining properties. In these instances, policy makers would be faced with a decision: accept somewhat higher levels of traffic congestion at these locations, or accept less robust transit-priority treatments. It should be noted that minimum roadway LOS standards in many urban areas are "D," or less in some cases.

CONCLUSION

Implementing the Long-Range Plan will require a wide range of activities, most of which will be led by GET staff. However, successful implementation will require the cooperation and coordination of many different stakeholders, including Kern COG, KRT, the City of Bakersfield and other agencies in the Metropolitan area. Ongoing public involvement and feedback will also be a critical component of moving forward with service plan implementation in the short, mid and long terms.

The major tasks involved in implementing the Short-Term Service Plan focus on service planning, operations, bus stops and facilities, and marketing/public information. In the midterm and long-term, additional analysis and study will be needed to determine the appropriate type and level of new transit service to meet community needs. Following any service change, monitoring effects

on ridership, revenues and other key indicators is critical. Finally, implementation of transit-supportive policies will help ensure the success of new transit services and help achieve environmental and sustainability objectives.

APPENDIX A: TRAVEL DEMAND MODELING METHODOLOGY

FEHR PEERS

MEMORANDUM

Date: November 29, 2011

To: Linda Rhine, Nelson\Nygaard; Rob Ball, Kern COG

From: Richard Lee, PhD, AICP and Kyle Cook, PE, Fehr & Peers

Subject: ***Metro-Bakersfield LRTP – Travel Demand Modeling Methodology***

WC10-2789

This report describes the travel demand modeling methodology used to prepare future year forecasts for the Bakersfield-Metro Transit Long Transit Plan. Travel forecasting was conducted to quantify transit ridership under the proposed transit system scenarios and to provide criteria to evaluate the effectiveness of the alternatives.

I. Model Version

The Kern COG Regional Travel Demand Forecast Model (Kern COG model) is a land use and transportation model covering Kern County, including the City of Bakersfield. The model base year is 2006, and future analysis years are 2020 (mid-range) and 2035 (long-range). The Kern COG model estimates travel patterns in the region, accounting for trips made by automobile and transit. For this analysis, model inputs representing land use and transportation facilities are the primary inputs that define the analysis scenarios. Although the model includes 4D enhancements, this functionally was not utilized because alternative land use scenarios were not developed.

II. Roadway Network

The roadway network is a key input to the travel demand model, providing pathways for automobile and transit trips to occur. The Kern COG model does include a feedback loop that is sensitive to roadway congestion and influences the distance, distribution, and mode of trips. The roadway networks essentially represent the Kern COG Regional Transportation Plan. The roadway networks were not significantly modified; however, minor improvements to roadway detail were necessary to accommodate the proposed transit routes.

III. Land Use Information

Land use inputs define the location and quantity of trip-generating land uses (e.g. households) and trip-attracting land uses (e.g. employers, colleges). The land use inputs and zone boundaries for this analysis were not modified from the Kern COG Regional Transportation Plan. To understand the influence of transit-supportive land policies, it is recommended that alternative land use scenarios be evaluated in subsequent studies of major investments for fixed guideway transit.

IV. Transit System

The transit input files define individual route characteristics such as path, stop location, and mode. Frequencies of service are input for peak and off-peak periods. The model base year (2006) transit system closely reflects existing transit service provide by Golden Empire Transit (GET). Regional transit providers, such as Kern Regional Transit (KRT) or Greyhound are not represented in the base year.

The Kern COG model is well suited to model bus transit systems within an urban environment; however the ability to distinguish other transit modes is limited. There is not a rail mode, so light rail or commuter rail transit cannot be explicitly represented. The model does not include off-highway or exclusive transit lanes.

While not explicitly mentioned in the model documentation, transit mode "3" was used in the default transit input files for 2020 and 2035 to represent a premium transit mode. We tested this mode and found that the model did not estimate off-peak period transit ridership for routes coded as mode 3, which significantly influences the total daily ridership. Therefore, all transit routes modeled in base- and scenario-years are transit mode 2 (bus).

To represent enhanced bus transit service, "hard-coded" speeds for individual transit routes were used to achieve a desired average travel time. Otherwise, by default the bus speeds are a function of vehicle speeds. The higher speeds for the enhanced transit routes are achievable assuming some combination of techniques like transit signal priority, exclusive lanes, queue jump lanes, and pre-paid boarding. In addition to the LRTP routes that will be operated by GET, three KRT routes were coded in the model for the future scenarios.

Park and Ride Lots

Park and ride lots are defined in a model input file (e.g., KE06PNR.dat) for each scenario. For the LRTP scenario, park and ride lots were defined based on the LRTP network. Some of the existing informal parking lots are retained, others are assumed to be new.

Transit Walk Access

The model uses an input file that defines the transit accessibility of individual zones (e.g., ke06MCHO.DAT). This file was updated to reflect zone-level transit service base on the LRTP transit network. The process uses GIS software to define half mile, one mile, and 1.5 mile buffers around bus stops or stations. These parameters allow the model to estimate the time for a portion of a trip that involves walking, e.g. from home to a transit stop.

V. Model Output

The analysis of model-generated data focused primarily on transit-related travel, including linked transit trips and ridership at the route level. Route level ridership was calculated by summarizing output from the transit assignment step. For example, the base year boarding summaries generated by the model are:

- KE06BEST.dbf – off-peak route ridership
- KE06DRPK.dbf – ridership during the peak period that drove to transit
- KE06WKPK.dbf – ridership during the peak period that walked to transit

Data from the output files were summarized to determine route boardings as well as operational characteristics like route distance, speed, and travel time.

Estimation of linked transit trips was accomplished by summarizing transit trip tables (e.g. KE06TRN2.MAT); the summation of matrix rowsums represents the total number of transit trips generated. Transit passenger miles were estimated using matrix algebra – multiplying the transit trip table and the zone-to-zone distance from the skim matrix.

Vehicle miles travelled (VMT); vehicle hours of travel (VHT), and average vehicle speeds were reported from the default model output (e.g., KE06_VMTVHT.TXT).

Detailed model results are included as Appendix A. The first table in this appendix provides system-wide results for the future scenarios, and the following tables detail route level performance for each scenario.

Appendix A – Detailed Model Forecast Results

Project Bakersfield Transit System Long-Range Plan
Date 22-Nov-11
Calculation Comparison of Future Transit Scenarios
Analyst Kyle Cook, Fehr & Peers

		2020			2035				
		Baseline Conditions	Transit Plan Alt Enhanced Speeds for Routes 1, 2, and 3 only	Percent Change (relative to baseline)	Baseline Conditions	Base Transit Plan (no enhanced speeds)	Percent Change (relative to baseline)	Transit Plan w. Enhanced Speeds	Percent Change (relative to baseline)
	Ridership (unlinked transt trips)	27,266	28,460	4%	30,246	50,569	67%	55,477	83%
	Linked Transit Trips	18,492	19,607	6%	20,107	32,408	61%	35,406	76%
	Ratio	1.47	1.45	-2%	1.50	1.56	4%	1.57	4%
	Daily Service Miles (typ. weekday)	33,789	14,468	-57%	33,789	21,983	-35%	21,983	-35%
	Passenger miles	85,277	108,914	28%	93,986	197,612	110%	231,290	146%
	Service productivity (passenger miles/service miles)	2.5	7.5	198%	2.8	9.0	223%	10.5	278%
Highway Assignment Summary									
	VMT	30,657,994	30,634,626	-0.1%	42,189,534	42,126,602	-0.1%	42,100,041	-0.2%
	VHT	747,970	746,969	-0.1%	1,032,887	1,030,168	-0.3%	1,029,174	-0.4%
Daily	Average Vehicle Speed	41.0	41.0	0.0%	40.9	40.9	0.1%	40.9	0.1%
	VMT	3,570,682	3,567,624	-0.1%	4,988,114	4,971,383	-0.3%	4,965,669	-0.4%
	VHT	88,550	88,537	0.0%	124,528	123,870	-0.5%	123,694	-0.7%
AM Peak	Average Vehicle Speed	40.3	40.3	0.0%	40.1	40.1	0.2%	40.1	0.2%
	VMT	6,300,175	6,293,787	-0.1%	8,737,631	8,720,037	-0.2%	8,713,477	-0.3%
	VHT	163,710	163,316	-0.2%	226,674	225,851	-0.4%	225,593	-0.5%
PM Peak	Average Vehicle Speed	38.5	38.5	0.2%	38.6	38.6	0.2%	38.6	0.2%
	Model File Source:	KE20_Base_2	KE20_LRTP_3		KE35_Base_2	KE35_LRTP_1		KE35_LRTP_3	

2020 BASE SCENARIO

					AM & PM Peak (5 hrs)			Off-peak (10 hrs)		
Route Name	Route Total	Distance (mi)	Peak Headway (min)	Off- Peak Headway (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)
1	644	14.3	40	40	8	214.5	68	15	429.0	67
2	2,777	28.2	20	20	15	844.8	113	30	1,689.5	112
3	333	11.9	60	60	5	118.8	56	10	237.7	54
4	1,038	13.8	20	20	15	414.5	57	30	829.0	56
5	1,962	27.1	20	20	15	813.3	117	30	1,626.5	116
6	558	23.2	60	30	5	231.5	121	20	926.0	121
7	1,795	33.7	30	30	10	673.7	121	20	1,347.3	121
8	873	11.6	30	15	10	231.0	59	40	924.0	58
9	2,840	27.2	30	15	10	544.3	110	40	2,177.3	108
10	685	9.6	45	45	7	128.3	33	13	256.7	33
11	1,750	32.0	30	30	10	640.8	159	20	1,281.7	159
12	22	4.8	45	45	7	63.9	43	13	127.8	41
13	1,166	14.3	30	30	10	285.5	40	20	571.0	40
14	897	15.2	45	45	7	202.9	48	13	405.8	48
15	440	7.9	45	45	7	105.9	27	13	211.8	27
17	247	15.6	30	30	10	312.2	40	20	624.3	39
18	1,068	9.5	45	45	7	126.3	28	13	252.7	28
19	1,600	17.1	30	20	10	342.8	51	30	1,028.5	51
20	206	10.9	30	20	10	218.0	43	30	654.0	42
21	85	7.3	30	20	10	145.7	25	30	437.0	25
CC1E HILLS	961	8.0	15	15	20	319.3	24	40	638.7	24
CC2 OILDALE	391	7.8	15	15	20	312.7	23	40	625.3	23
CC3	426	6.2	15	15	20	247.7	17	40	495.3	17
CC4 RDGVW/S	842	6.7	15	15	20	267.3	17	40	534.7	17
CT1N WSTRN	1,240	14.2	15	15	20	569.3	38	40	1,138.7	38
CT2 RSDLE/E	462	13.5	15	15	20	538.0	29	40	1,076.0	29
CT3 SW/DWTN	775	15.3	15	15	20	613.3	39	40	1,226.7	38
CT4 SW/NE	1,183	20.8	15	15	20	830.0	61	40	1,660.0	61
System Total	**27,266**					**10,356**			**23,433**	

Total Route Miles **33,789**

2020 LRTP SCENARIO

					AM & PM Peak (5 hrs)			Off-peak (10 hrs)		
Route Name	Route Total	Distance (mi)	Peak Headway (min)	Off- Peak Headway (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)
1	2,406	12.1	15	15	20	484	34	40	968.0	34
2	4,834	16.2	15	15	20	647	48	40	1,293.6	48
3	2,021	13.6	15	15	20	544	42	40	1,088.8	41
11	3,260	18.7	20	60	15	560	96	10	373.2	96
12	4,289	17.7	20	60	15	530	87	10	353.2	86
13	2,255	14.5	20	60	15	434	67	10	289.4	67
14	914	7.6	20	60	15	229	47	10	152.4	45
21	1,381	20.8	60		5	208	96	*0*	-	96
22	2,181	15.6	30	60	10	312	72	10	312.2	72
23	339	10.1	60		5	101	43	*0*	-	43
24	1,759	14.0	30	60	10	281	64	10	280.6	64
25	172	14.6	60		5	146	63	*0*	-	63
26	183	3.2			*0*	0	26	*0*	-	26
27	266	8.0	60		5	80	37	*0*	-	37
101	741	11.4	20	60	15	342	48	10	228.1	47
102	805	41.4	60		5	414	155	*0*	-	154
103	38	29.9	120		3	149	59	*0*	-	58
104	509	30.2	60		5	302	120	*0*	-	118
KRT1	37	39.4	60	60	5	394	145	10	788.4	145
KRT2	55	40.0	60	60	5	400	80	10	799.8	80
KRT3	15	32.8	60	60	5	328	62	10	656.6	60
System Total	**28,460**					**6,884**			**7,584**	

Total Route Miles **14,468**

Get Routes only 28,353
Annualized 8,279,076

* This scenario inlcludes speed enhancments only to Routes 1, 2, and 3

2035 BASE SCENARIO

					AM & PM Peak (5 hrs)			Off-peak (10 hrs)		
Route Name	Route Total	Distance (mi)	Peak Headway (min)	Off- Peak Headway (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)
1	691	14.3	40	40	8	214.5	67	15	429.0	67
2	3,095	28.2	20	20	15	844.8	113	30	1,689.5	113
3	337	11.9	60	60	5	118.8	55	10	237.7	53
4	1,022	13.8	20	20	15	414.5	56	30	829.0	55
5	2,099	27.1	20	20	15	813.3	117	30	1,626.5	116
6	634	23.2	60	30	5	231.5	120	20	926.0	120
7	1,875	33.7	30	30	10	673.7	121	20	1,347.3	121
8	927	11.6	30	15	10	231.0	59	40	924.0	58
9	3,020	27.2	30	15	10	544.3	110	40	2,177.3	109
10	760	9.6	45	45	7	128.3	33	13	256.7	33
11	1,867	32.0	30	30	10	640.8	160	20	1,281.7	160
12	22	4.8	45	45	7	63.9	43	13	127.8	41
13	1,376	14.3	30	30	10	285.5	40	20	571.0	40
14	927	15.2	45	45	7	202.9	48	13	405.8	47
15	432	7.9	45	45	7	105.9	27	13	211.8	27
17	267	15.6	30	30	10	312.2	33	20	624.3	33
18	963	9.5	45	45	7	126.3	28	13	252.7	28
19	1,903	17.1	30	20	10	342.8	51	30	1,028.5	51
20	205	10.9	30	20	10	218.0	43	30	654.0	42
21	106	7.3	30	20	10	145.7	25	30	437.0	25
CC1E HILLS	1,569	8.0	15	15	20	319.3	24	40	638.7	24
CC2 OILDALE	428	7.8	15	15	20	312.7	23	40	625.3	23
CC3	595	6.2	15	15	20	247.7	17	40	495.3	17
CC4 RDGVW/S	863	6.7	15	15	20	267.3	17	40	534.7	17
CT1N WSTRN	1,383	14.2	15	15	20	569.3	39	40	1,138.7	39
CT2 RSDLE/E	552	13.5	15	15	20	538.0	29	40	1,076.0	28
CT3 SW/DWTN	906	15.3	15	15	20	613.3	39	40	1,226.7	38
CT4 SW/NE	1,422	20.8	15	15	20	830.0	62	40	1,660.0	62
System Total	**30,246**					**10,356**			**23,433**	

Total Route Miles **33,789**

Kern COG Model Results
2035 LRTP Transit System
No Speed Enhancements

2035 LRTP SCENARIO (w/ DEFAULT SPEEDS)

					AM & PM Peak (5 hrs)			Off-peak (10 hrs)		
Route Name	Route Total	Distance (mi)	Peak Headway (min)	Off- Peak Headway (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)
1	3,347	12.1	10	15	30	726	63	40	968	63
2	5,940	16.2	10	15	30	970	83	40	1293	83
3	4,330	13.6	10	15	30	816	70	40	1088	69
11	3,901	18.7	15	30	20	747	96	20	747	96
12	6,554	17.7	15	30	20	706	87	20	706	86
13	3,096	14.5	15	30	20	579	67	20	579	67
14	1,079	7.6	15	30	20	305	47	20	305	45
21	5,167	20.8	30	60	10	416	94	10	416	94
22	2,405	15.6	30	60	10	312	71	10	312	71
23	2,341	10.1	30	60	10	201	43	10	201	43
24	2,108	14.0	30	60	10	281	65	10	281	65
25	2,502	14.2	30	60	10	284	62	10	284	62
26	713	6.3	30	60	10	127	24	10	127	24
27	981	8.0	30	60	10	160	37	10	160	37
101	1,105	11.4	15	30	20	456	54	20	456	53
102	3,152	41.4	30	60	10	827	147	10	827	146
103	41	29.9	120	60	3	149	61	10	597	60
104	1,680	30.2	30	60	10	604	121	10	604	119
KRT1	49	39.4	60	60	5	394	146	10	788	145
KRT2	57	40.0	60	60	5	400	80	10	800	80
KRT3	21	32.8	60	60	5	328	60	10	656	59
System Total	**50,569**					**9,788**			**12,195**	

Total Route Miles **21,983**

Get Routes only 50,442
Annualized 14,729,064

* This scenario models all routes without speed enhancments.

Kern COG Model Results
2035 LRTP Transit System
With Speed Enhancements

2035 LRTP SCENARIO (w/ ENHANCED SPEEDS)

					AM & PM Peak (5 hrs)			Off-peak (10 hrs)		
Route Name	Route Total	Distance (mi)	Peak Headway (min)	Off- Peak Headway (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)	Number of trips (one way)	Route miles	Model-based Travel Time (min)
1	4,916	12.1	10	15	30	726	34	40	968	34
2	7,618	16.2	10	15	30	970	47	40	1293	47
3	3,124	13.6	10	15	30	816	41	40	1088	41
11	3,929	18.7	15	30	20	747	66	20	747	66
12	6,881	17.7	15	30	20	706	53	20	706	52
13	3,289	14.5	15	30	20	579	41	20	579	41
14	1,412	7.6	15	30	20	305	26	20	305	25
21	5,429	20.8	30	60	10	416	66	10	416	66
22	2,648	15.6	30	60	10	312	48	10	312	48
23	2,400	10.1	30	60	10	201	36	10	201	36
24	2,432	14.0	30	60	10	281	36	10	281	36
25	2,665	14.2	30	60	10	284	40	10	284	40
26	734	6.3	30	60	10	127	18	10	127	18
27	1,097	8.0	30	60	10	160	20	10	160	20
101	510	11.4	15	30	20	456	34	20	456	33
102	3,847	41.4	30	60	10	827	79	10	827	79
103	34	29.9	120	60	3	149	61	10	597	60
104	2,372	30.2	30	60	10	604	35	10	604	34
KRT1	50	39.4	60	60	5	394	146	10	788	145
KRT2	66	40.0	60	60	5	400	80	10	800	80
KRT3	24	32.8	60	60	5	328	60	10	656	59
System Total	**55,477**					**9,788**			**12,195**	

Total Route Miles **21,983**

Get Routes only 55,337
Annualized 16,158,404

* This scenario inlcludes speed enhancments for all routes.

APPENDIX B: CSUB TRANSIT CENTER

As part of the Long-Range Plan process, a design concept for a new California State University, Bakersfield Transit Center was developed. This Appendix describes the proposed Center, which is now the subject of discussions between GET District and CSUB staff. Construction of the Center is a core recommendation of the Short-Term Service Plan.

BACKGROUND

The existing GET stop at CSUB is located adjacent to a small cul-de-sac at the end of Don Hart Drive West, near the center of campus, accessible from Stockdale Highway to the north. Both capacity and access are limited, and if service to CSUB is to be expanded as recommended under the Short-, Midterm and Long-Term Service Plans, the stop will need to be replaced by a larger, more accessible facility.

From a pedestrian access perspective the existing location is ideal, as it is near the center of campus. From a transit operations perspective, however, it is both constrained and problematic to access, as left turns cannot be made from Don Hart Drive West onto Stockdale Highway. Buses headed west must first proceed east to Don Hart Drive East using a circuitous path.

Prior to meeting with Nelson\Nygaard staff, CSUB officials had proposed construction of a new transit center near the far southwestern corner of the campus, along Camino Media near Forum Way. This site, roughly a half-mile from the nearest existing campus buildings via an unimproved pedestrian pathway, would result in reduced transit access to/from the campus.

Upon learning of the proposal, Nelson\Nygaard staff made a field visit in order to survey alternative sites. A location along the south side of Kroll Way, just east of Don Hart Drive East, was identified as optimal from both a pedestrian access and transit operations perspective. It is near the center of campus, and access would be via a loop of Don Hart Drive East, Kroll Way, Gosford Road, and Stockdale Highway – a loop that could be made either clockwise or counterclockwise, as the intersections of Stockdale and Don Hart and Gosford and Kroll are both signalized, meaning that buses can easily and safely turn left.

The proposed site is shown as a red oval in Figure B-1. The Camino Media site is marked with a yellow circle, and the existing site is shown in orange.

Figure B-1 Proposed Transit Center Location

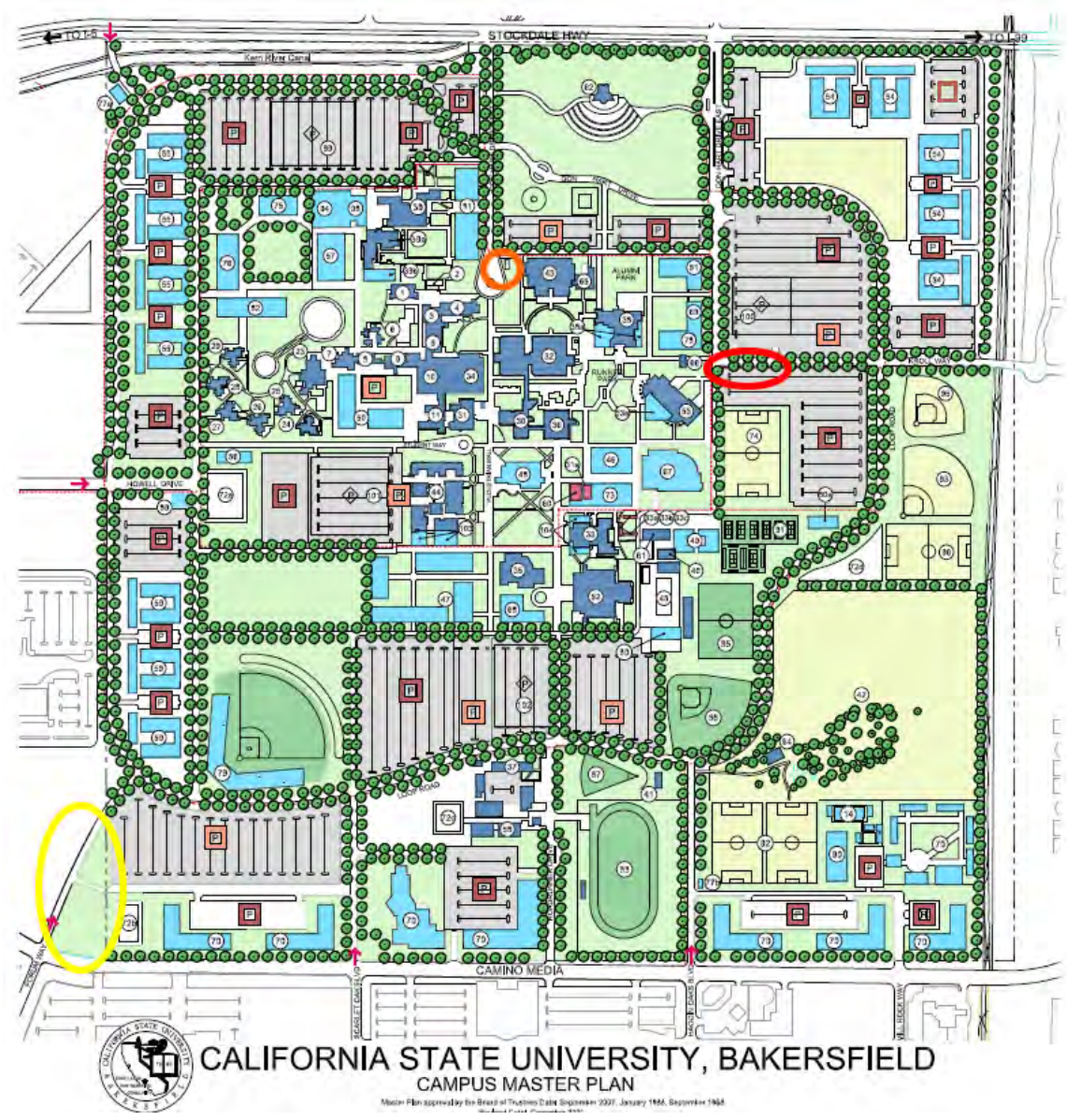


Image source: CSUB Master Plan

During a meeting with Nelson\Nygaard staff, CSUB staff expressed support for the concept, noting that it was consistent with the campus's master plan, and requested a conceptual design and additional information on potential funding sources.

The conceptual design is shown in Figure B-2. Primary features include:

- A "nose-to-tail" configuration taking advantage of the relatively long and narrow footprint of the site (which is currently a bare dirt surface roughly 85 feet wide between the street and an adjacent lawn).
- Three bus bays in each direction, for a total of six. This is enough space to accommodate significant growth in transit service to the campus.
- A center roadway, with entryways wide enough for buses to easily maneuver past one another.
- Relatively spacious (12 feet wide by at least 180 feet long) platforms for passengers.
- Six high-quality, extra-large shelters featuring seating and other amenities.
- Trees providing additional protection from the elements, and serving to beautify the site.
- Kiosks providing maps and other information for both CSUB and GET and possibly KRT.
- A class I off-street bicycle path (in keeping with the university's plan to provide a major east-west bicycle route along Kroll Way connecting to an existing north-south route along Don Hart Drive East).
- Bicycle lockers, and potentially additional (rack) parking for bicycles, taking advantage of the site's location at a bicycle route "crossroads."
- New and improved crosswalks and sidewalks ensuring comfortable and safe pedestrian travel between the transit center and campus core.
- An electric vehicle (EV) charging station in the parking lot across Kroll Way.

It should be emphasized that the design remains strictly conceptual. It is intended simply to illustrate possible elements of and parameters for a transit facility on the site.

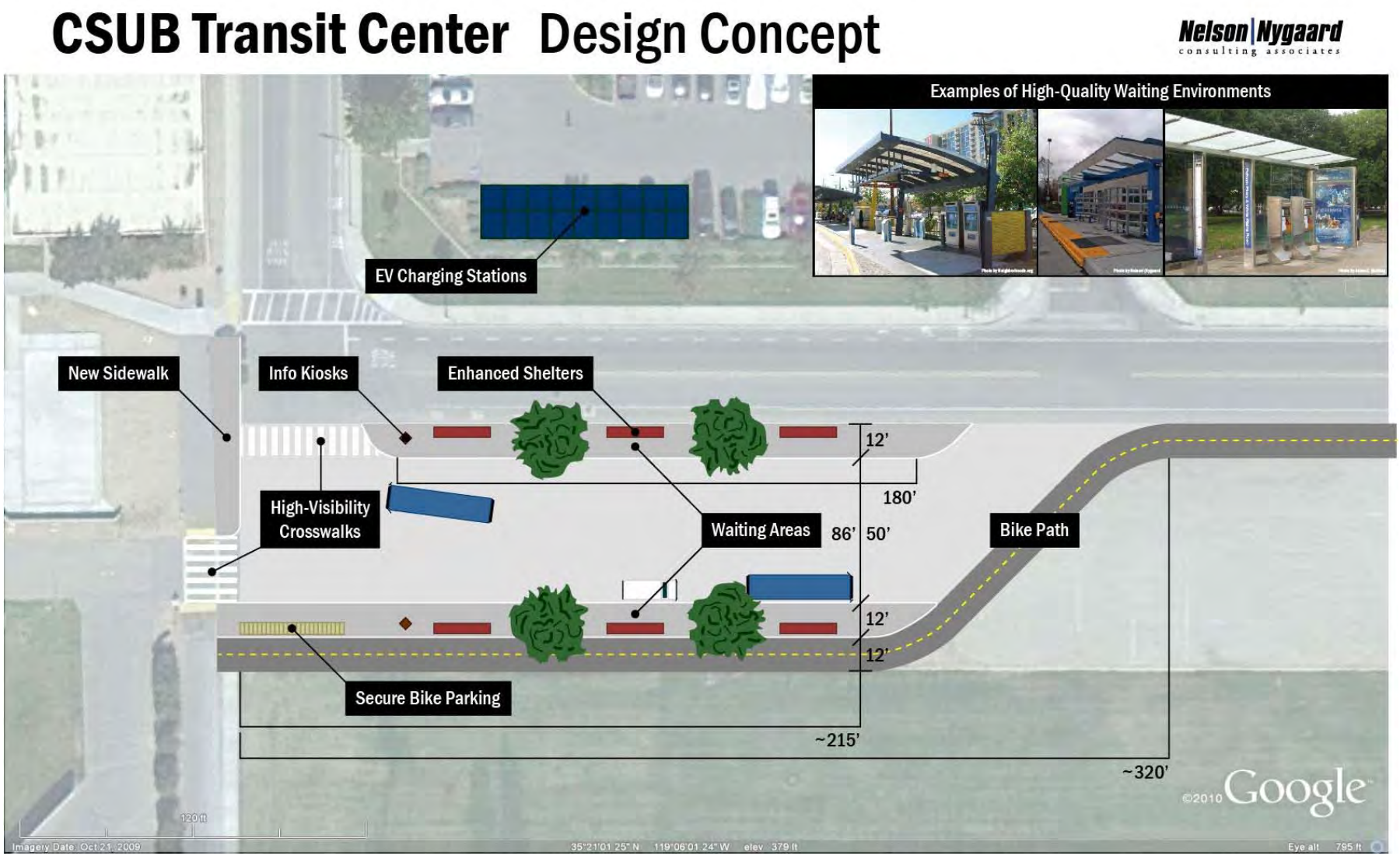
Capital cost for a relatively basic facility such as that shown in Figure B-2 would likely be in the range of $1.5 to $2.5 million. It might be possible to obtain funding from a number of non-traditional sources depending upon the elements included in the final plan. For example, if it were to include EV charging stations, the project might be eligible for a grant from the San Joaquin Air Pollution Control District. Funding opportunities are also available through the Federal Transit Administration (FTA). Another option might be a public-private partnership between GET, the City of Bakersfield, CSUB and nearby businesses that would benefit from increased transit service to the area. Finally, the center might present an opportunity to develop a plan for funding both the center and improved bus service to campus via a student fee/pass program.

The next step in the development process would be a formal transit center study. Such a study would have three primary components:

- Facility Needs Assessment (finalize location and amenities)
- Facility Design (up to 20% of final engineering)
- Facility Funding Plan

Such a study could be completed in 3 to 6 months.

Figure B-2 CSUB Transit Center Conceptual Design



APPENDIX C: PROPOSED ADDITIONAL SERVICE PRIORITIES AND PRODUCTIVITY STANDARDS

NELSON
NYGAARD

MEMORANDUM

To: Karen King

From: Paul Jewel, Linda Rhine, and Steve Boland

Date: March 6, 2012

Subject: Bakersfield LRP: Proposed Additional Service Priorities and Productivity Standards

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This memorandum is in response to your request that Nelson\Nygaard complete two additional tasks:

- Identification of possible priorities for investment, should additional funding become available, in increasing service beyond that provided in the Short Term Service Plan
- Identification of potential revised productivity standards for each of the service categories identified in the Short Term Service Plan

ADDITIONAL SERVICE PRIORITIES

Nelson\Nygaard and GET staff have previously discussed possible changes to the Short Term Service Plan if, upon operationalization of routes, cost estimates prove lower than anticipated and funding is inadequate. Following are recommendations for priority changes should additional funding become available.

- First, it is recommended that *no changes be made until one year after implementation* of the Short Term Service Plan. This is because ridership patterns typically take about a year to mature and settle, especially when entirely new services (such as Rapid service) have been introduced, and delaying changes for a year would help to ensure that additional resources are invested wisely, on the basis of known needs. Should additional funding become available prior to implementation of the Short Term Service Plan, it is recommended that GET place this money in reserve if possible.
- Alternately, if possible additional funding might be invested in capital improvements that would serve to improve service and/or reduce operating costs, most notably the additional stop on Truxtun Avenue that would allow Routes 12 and 16 to be connected. Other short-term capital needs include changes to the Southwest Transit Center allowing exiting buses to turn left onto Wible Road; construction of the new CSU Bakersfield Transit Center; and improvements to Rapid corridors as identified in the Short Term Service Plan.
- Finally, if additional resources are to be invested immediately into additional service, we recommend the following options:
  - *20-minute rather than 30-minute daytime service on Route 117.* Route 117 is identical to existing Route 17, which currently carries full or nearly-full loads. GET

staff have previously considered increasing frequencies on Route 17 from 30 to 20 minutes.

- *20-minute rather than 30-minute daytime service on Route 12*. Route 12 is nearly identical to existing Route 4; another route that currently carries full or nearly full loads, in the case of Route 4 on 20-minute headways. We have recommended that all headways and spans within each route-type category (except Express) be consistent; nonetheless, it may prove necessary to operate Route 12 on 20-minute headways.
- *30-minute rather than 60-minute evening service on Routes 12 and 117.* This option should only be implemented upon implementation of 20-minute daytime service on these routes.

PRODUCTIVITY STANDARDS

GET staff has rightly recognized that the introduction of distinct categories of service represents an opportunity to tailor the agency's standards to reflect the different demands placed on different types of service by GET and its customers. In addition to productivity standards, GET might consider alterations to its standards for load factor (e.g., a stricter standard for express routes) and on-time performance (e.g., a headway-based standard for Rapid routes). Following are recommendations for productivity.

Current Standard

GET's current productivity standard is based on the most common measure of productivity in the transit industry, boardings per hour of revenue service. The standard for each route is 60 percent of systemwide weekday average. Routes that fail to achieve this standard may be subject to review and possible service reduction.

Service Categories

For purposes of developing productivity standards, these five categories of service identified in the Short Term Service Plan might be briefly described as follows.

- *Rapid:* limited-stop (i.e., fast) services operating relatively frequently, into the evening seven days a week in the highest-demand corridors
- *Crosstown:* local-stop services operating at moderate frequencies, into the evening seven days a week in moderate-demand corridors
- *Circulator:* local-stop services operating relatively infrequently, on weekdays only in low-demand corridors
- *Express:* services making very few stops, and operating at varying frequencies and at various times between major origins and destinations
- *Circulator Express:* services making local stops in low-demand corridors and very few stops between those corridors and major destinations, and which operate relatively infrequently, on weekdays only

Factors in Productivity

In general, high, medium and low levels of the attributes identified in the previous list – speed, frequency, span and demand – are associated with high, medium and low ridership.

However, as productivity is based on numbers of riders *per hour* of service, it can be negatively impacted by higher levels of service (in terms of both frequency and span). According to *TCRP 66: Fixed-Route Transit Ridership Forecasting and Service Planning Methods*, ridership-to-frequency elasticities generally range from 0.3 to 1.0, with an average around 0.5. This suggests that all else being equal, a service operating every 15 minutes might have 50 percent more riders than one operating every 30 minutes; however, its productivity would be 25 percent lower. Similarly, the evening and weekend periods during which services with longer spans operate are generally less productive than weekday periods.

For these reasons, it should not automatically be assumed that productivity standards for Rapid routes should be higher than those for Crosstown routes, or that standards for Crosstown routes should be higher than those for Circulator routes.

Productivity of Current GET Routes

In developing new standards, it might be useful to consider the performance of current GET routes. According to GET's most recent Short Range Transit Plan, Fiscal Year 2008-2009 productivity on individual GET routes ranged from 22 to 152 percent of systemwide weekday average. The lowest- and highest-performing routes are as follows.

- The lowest-performing route, Route X92, is GET's only intercity express service; strongly peak commute-oriented, it suffers from low reverse-direction and mid-day ridership.
- The next lowest-performing route, at 56 percent of system average, was Route 18, a circulator primarily serving low-density neighborhoods in Northwest Bakersfield.
- The third highest-performing route, at 126 percent of average, was Route 8, which operates in high-demand corridors in East Bakersfield but somewhat less frequently (every 30 minutes base) than other high-ridership routes.
- The highest-performing route (in a tie with the following route) was Route 4, which operates almost entirely within high-demand corridors in Northeast Bakersfield, between the major destinations of Downtown Bakersfield and Bakersfield College.
- The other highest-performing route, Route 17, is a local express service making only major stops, and only on weekdays.

Remaining routes at or above the systemwide average – 2, 5, 11, 12 and 13 – operate relatively frequently in high-demand corridors, with the notable exception of Route 12, which benefits in this regard from a very low number of service hours.

Peer Review

According to review conducted for *Best Practices in Transit Service Planning*, by the Center for Urban Transportation Research at the University of South Florida, most productivity standards are based on absolute figures, sometimes varying by service type, frequency and period. A few operators, such as Denver's Regional Transportation District, apply a relative standard based on tiers: for example, routes are divided into deciles and/or quartiles based on performance, with the routes in the lowest-performing tier subject to review.

Proposed Methodology

GET's current standard is based on relative rather than absolute performance. This is appropriate given the purpose of the standard: to identify services in need of attention and possible revision.

It also acknowledges the many external factors in transit ridership beyond the influence of service design, such as gas prices and unemployment rates.

Moreover, GET's standard is based on a percentage of the average, an appropriate approach where there are relatively few routes.

In four of the five categories, all routes would operate at the same frequencies during the same periods, normalizing for these attributes. The relative speeds of different routes within the same category should also be comparable, as the categories are defined in large part by patterns of stop spacing. Within each category, then, productivity should primarily reflect demand.

However, the Express category would feature two routes with very different characteristics: the existing Route X92, and Route 117, which would follow the same alignment and operate as frequently during weekdays as the current Route 17, but would also operate evenings and weekends. These routes serve very different markets and purposes.

All of this suggests that for all categories other than Express, a category-level standard would be appropriate. However, the two Express routes should be evaluated separately.

Proposed Standards

The following proposed standards are based on existing conditions in Bakersfield, analysis conducted during development of the Short Term Service Plan, and professional judgment.

Figure X Recommended Productivity Standards

Category	Rapid	Crosstown	Circulator	Express	Circ/Exp
% of systemwide weekday average	100%	80%	60%	See below	60%

For Express routes, it is recommended that the Rapid standard of 100 percent be applied to Route 117 (which is in effect a "super-limited" service with characteristics similar to Rapid routes), and that GET staff make their own determination as to what standard would be appropriate to apply to Route X92, a unique route due to the public-private arrangement under which it is operated.

It is further recommended that whatever standards are ultimately adopted, they be reviewed after one year for possible revision. If several of the routes in a category fail to achieve the standard (in three of the categories, there are just two routes, and in a fourth category there are just three routes), then the standard is likely too high.