

Honolulu Rail Transit Project Light Rail vs. Honolulu Light Metro

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HONOLULU RAIL TRANSIT THE EARLY YEARS

Honolulu Rapid Transit & Land Co. (HRT&L) Limited

- **Operated 1901 to 1941 as a streetcar operation**
- **Steady growth to 1913-14 when ridership began to slip due to the increased automobile ownership.**
- **World War I resulted in increased ridership reaching a high in 1923 with over 20 million patrons paying to ride the system.**

Honolulu Rapid Transit & Land Co. (HRT&L) Limited

- **By 1930 the ridership decreased to 14.5 million riders due to the automobile, high taxes and the use of jitneys**
- **In 1933, HRT&L was allowed to abandon some lines and replace streetcars with rubber-tired buses.**
- **Between 1933-1937, HRT&L maintained a mixed fleet of buses and streetcars.**
- **By 1941 streetcars were replaced with buses and trolley buses.**

Honolulu Rapid Transit & Land Co. (HRT&L) Limited

- **The last streetcar ride was made on June 30, 1941. Within 160 days, bombs would fall on Pearl Harbor.**
- **Gas powered buses were widely used by the early 1930s.**
- **The trolley bus, part streetcar and part bus, which used an electric motor run off an overhead catenary system, were used on the island from 1938 to 1957.**



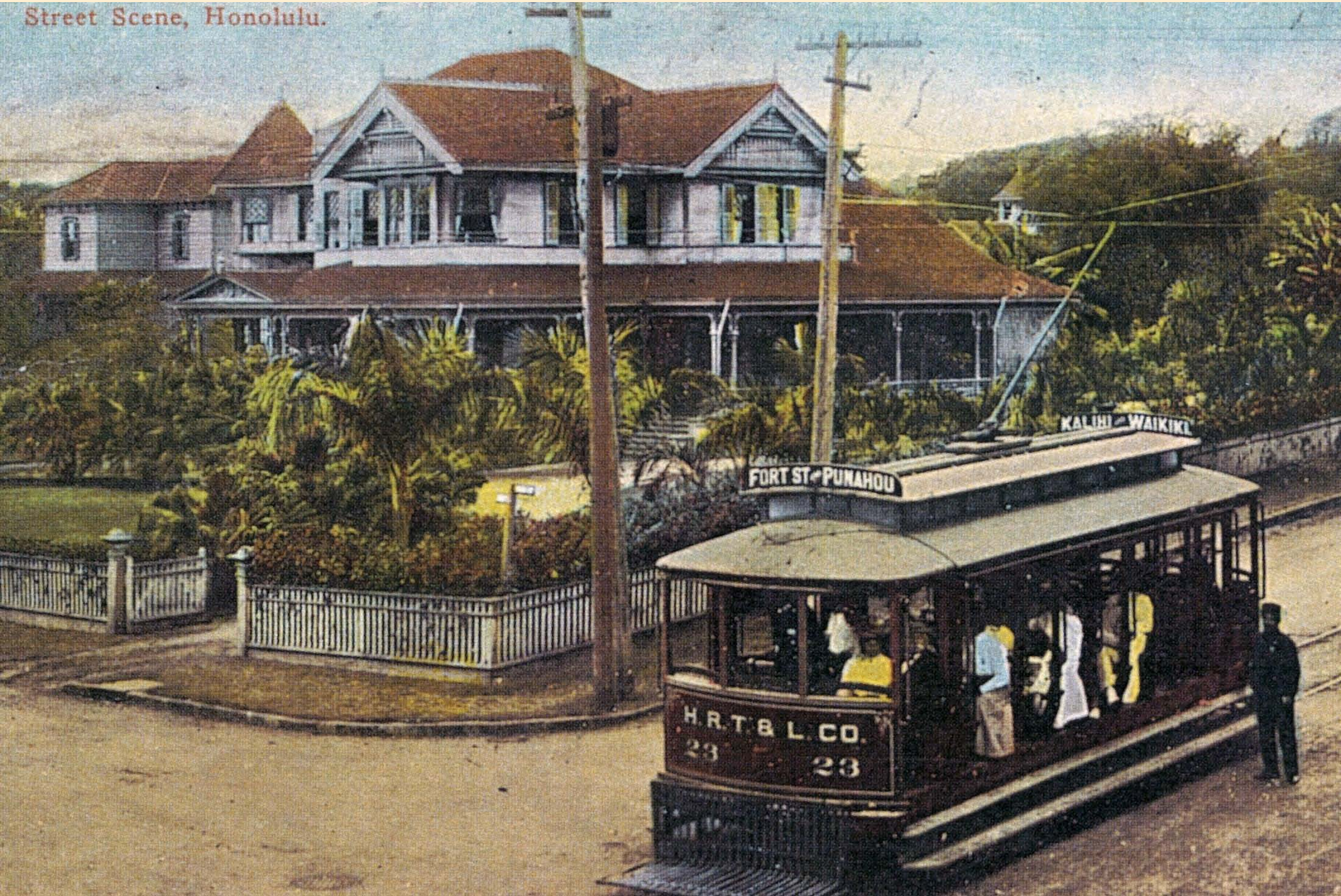


Source: Melvin



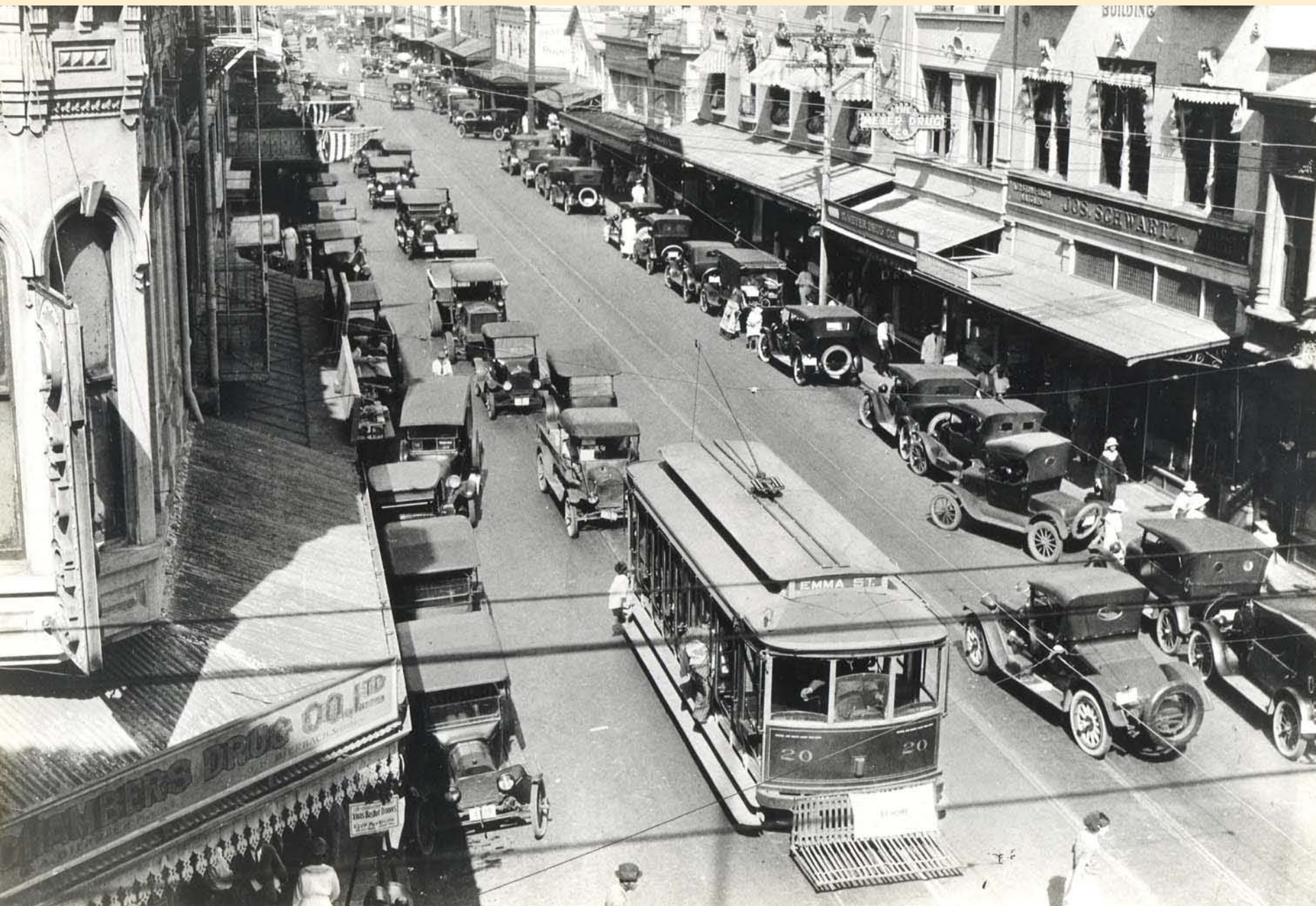


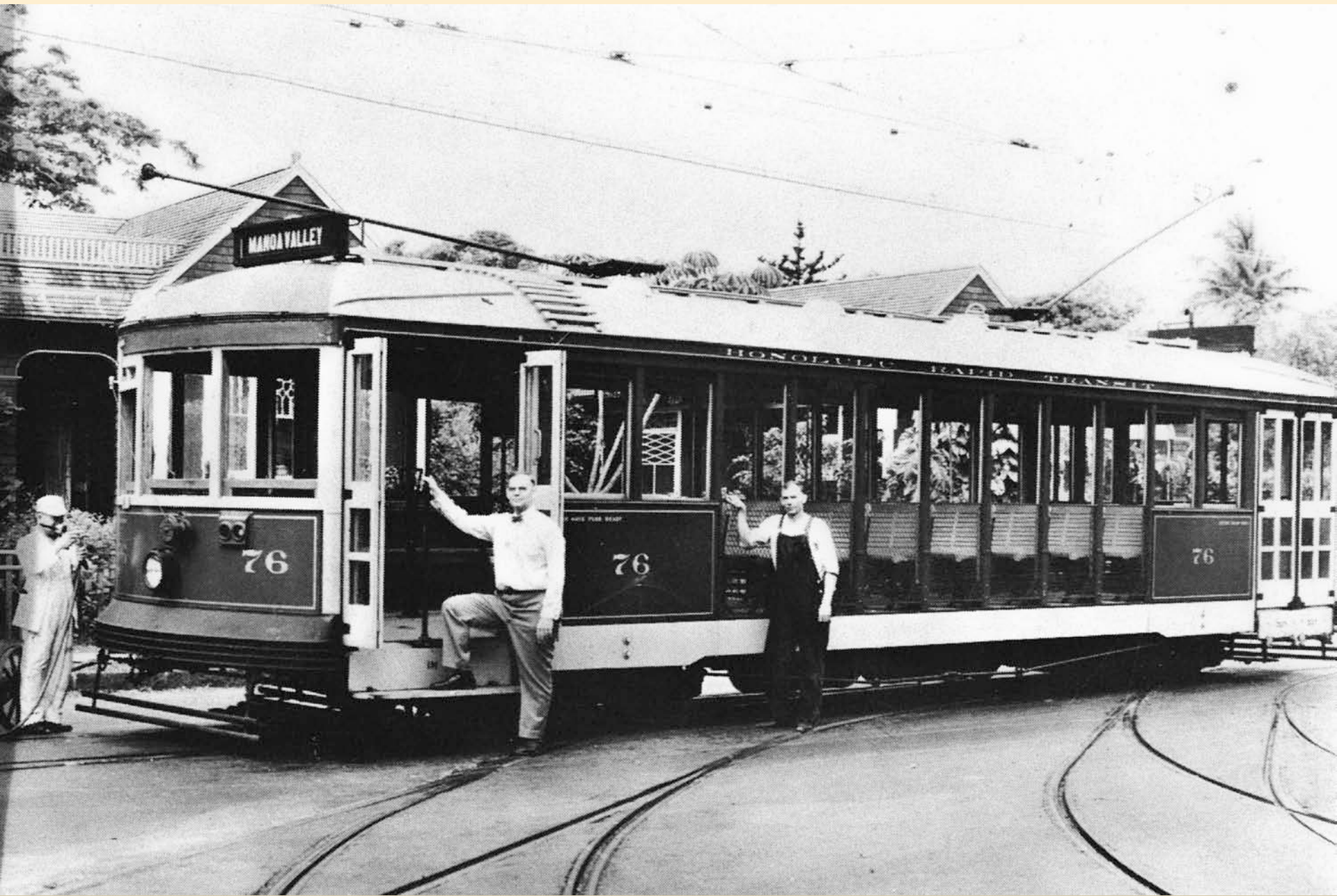
Street Scene, Honolulu.





Source: Bishop Museum











RIVERSIDE

3318

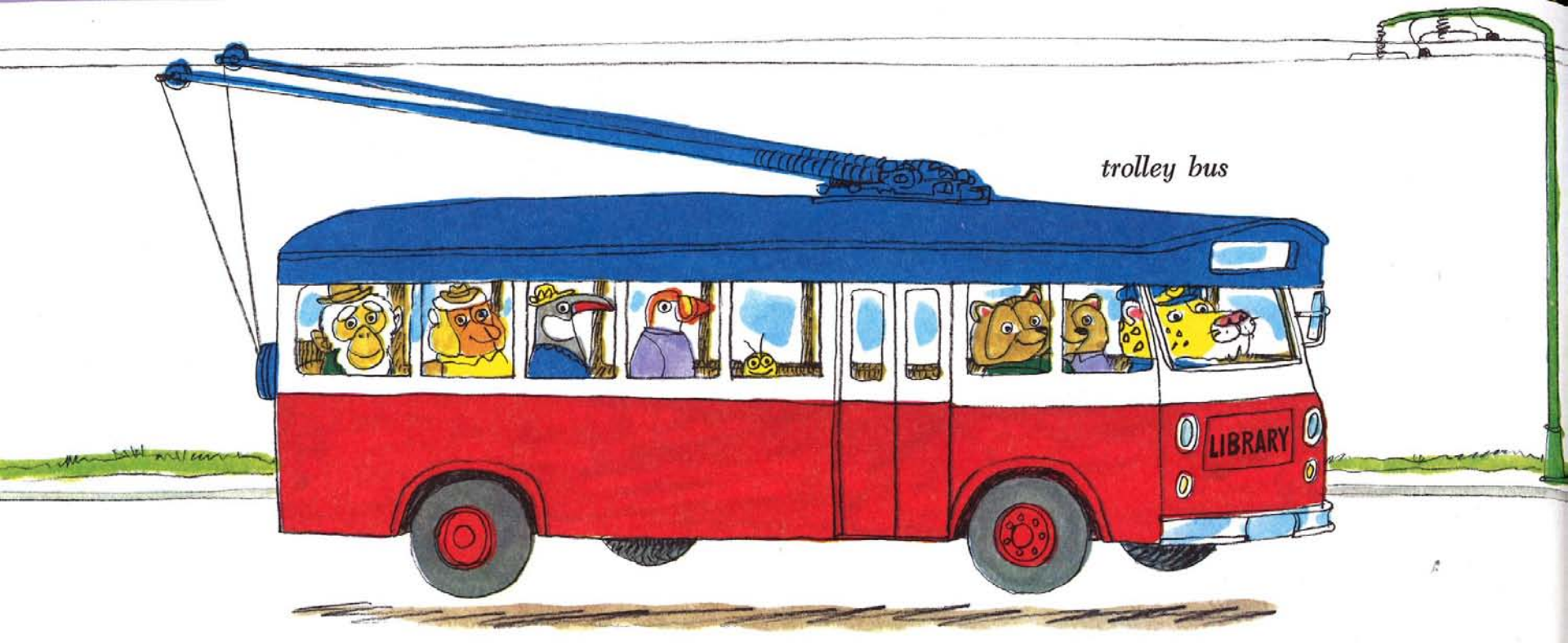


ABLE
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3318

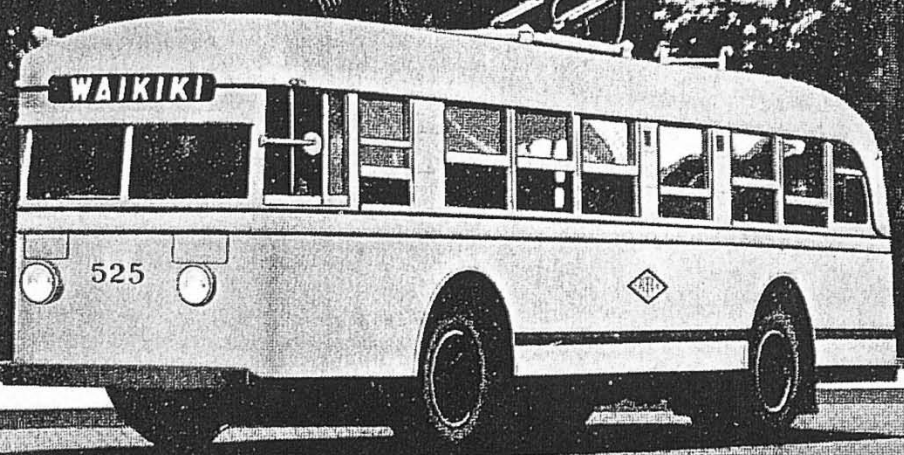
RIVERSIDE

Trolleybus





*The new way
to Waikiki*



Trolley Coaches
BRILL

Fixed Guideway Rail Transit

- **1967 – O`ahu Transportation Study concluded that a fixed guideway system would provide cost-effective transportation capacity as part of a larger transportation system.**
- **1970s – The City began planning for the Honolulu Area Rail Rapid Transit (HART) Project. However, a change in administrations resulted in different transportation priorities.**

Fixed Guideway Rail Transit

- **1985 – The City began a new study for an exclusive right-of-way, fixed guideway rapid transit project**
- **1992 – A Final EIS was issued for the project. However, the City Council failed to authorize the General Excise and use Tax (GET) surcharge.**
- **2004-2005 – O`ahu Regional Transportation Plan 2030 identified the need for a fixed guideway system.**

1992 Rendering



Fixed Guideway Rail Transit

- **2005 – The State Legislature passed an Act that authorized the City to levy a GET surcharge to construct and operate a mass transit system serving O`ahu.**
- **2006 – An Alternative Analysis report evaluated four alternatives to provide transit service.**
- **November 2008 – The voters of O`ahu passed a charter amendment that declared the City should establish a steel-wheel on steel-rail transit system.**

Fixed Guideway Rail Transit

- **June 2010 – The Final Environmental Impact Statement was published.**
- **January 2011 – The Record of Decision was issued by FTA.**
- **July 1, 2012 – The Honolulu Authority for Rapid Transportation (HART) began operations after being approved by votes in November 2010.**
- **April 2012 – Guideway construction began.**

Light Metro

A “Light Metro” or medium capacity system is a term used to differentiate an intermediate system between light rail and heavy rail. It typically has two to four cars, lower frequency and longer distance between stations than Light Rail and runs on exclusive rights-of-way. It is also usually powered by a third rail system and not an overhead catenary.

Light Metro

The Honolulu system is not heavy rail because it does not have large patronage numbers and cannot be called light rail since it only runs on exclusive rights-of-way and cannot run on streets due to the third rail. Hence the Honolulu system is classified as Light Metro.

Light Metro systems are more common in European and Asian cities and not well known in the U.S.

Light Rail vs. Honolulu Light Metro

**Light Rail definitions as
defined by TCRP 155, Track
Design Handbook for Light
Rail Transit, Second Edition
(Section 1.2.2)**

Light Rail (LR) vs. Honolulu Light Metro (HLM)

- **LR – Light rail is a system of electrically propelled passenger vehicles with steel wheels that are propelled along a track constructed with steel rails.**
- **HLM – Honolulu system is a steel wheel on steel rail system propelled by AC Motors on electrically propelled vehicles.**

Light Rail vs. Honolulu Light Metro

- **LR - Propulsion power is drawn from overhead distribution wire by means of a pantograph or other current collector and returned to the electrical substations through the rails.**
- **HLM – Traditional third rail system drawn from 750 VDC.**

Light Rail vs. Honolulu

Light Metro

- **LR - The tracks and vehicles must be capable of sharing the streets with rubber-tired vehicular traffic and pedestrians. The track system may also be constructed within exclusive rights-of-way.**
- **HLM – Is predominately an elevated system constructed only on exclusive rights-of-way.**

Light Rail vs. Honolulu

Light Metro

- **LR - Vehicles are capable of negotiating curves as sharp as 25 meters (82 feet) and sometimes even sharper in order to traverse city streets.**
- **HLM – Design criteria specifies mainline minimum radii of 500 ft. on aerial structures and 300 ft. for at-grade and 150 ft. absolute minimum for yard tracks.**

Light Rail vs. Honolulu Light Metro

- **LR – Vehicles are not constructed to structural criteria (primarily crashworthiness or buff strength) needed to share the track with much heavier railroad commuter and freight equipment.**
- **HLM – Similar criteria as the LR vehicle for crashworthiness with no vehicular traffic crash requirement.**

Why not Light Rail in Honolulu

- **Honolulu is not blessed with the types of available linear right-of-way typically used for light rail, such as abandoned railroad property or power lines. The only earlier railroad right-of-way has now been substantially lost to development, although certain sections have been preserved for recreational use.**
- **Honolulu's congestion is ranked first in the nation by several observers. It is not reasonable to dedicate current street rights-of-way to exclusive use of transit vehicles.**

Why not Light Rail in Honolulu

- **Mixed traffic running is also of little use because trains would be impacted by the same congestion which is clogging the rubber tired traffic.**
- **It is possible to utilize relatively narrow arterial medians for 8' dia. columns for an elevated guideway. These medians could not accommodate a 28' LRT right-of-way without loss of lanes.**
- **While there are limited opportunities to provide at-grade crossings, it is advantageous to fully grade separate the system and utilize the benefits of driverless full automation.**

Honolulu Light Metro

- **The Honolulu Light Metro system will be an automated driverless system which will have platform screen gates at the stations. The vehicles will be 64 feet in length and operated in a 2-car consist. Capacity of each 2-car train including seats and standees is 400 passengers.**

Honolulu Light Metro

VEHICLE CHARACTERISTICS

- **Trainset of 2, 3 or 4 vehicles**
- **Fully automated**
- **Wide gangway (4'-7") between vehicles**
- **Wide bodyside doors (4'-7")**
- **High Floor (3.77ft above top of rail)**
- **Level boarding**
- **Video recording / link to Operations Control Center**
- **Automatic passenger counting system**

Honolulu Light Metro

VEHICLE CHARACTERISTICS (Cont.)

- **Controlled collapse ends**
- **Shock absorbing autocouplers / intermediate couplers**
- **Derailment mitigation**
- **On-board rail lubrication**
- **Air Conditioning**
- **Third rail power collection**
- **Capacity to handle wheelchairs, bicycles, luggage and surfboards**

Honolulu Light Metro Vehicle



AUTOMATED LIGHT METROS SYSTEMS

- **Europe (10)**

- Barcelona
- Toulouse
- Lyon
- Rennes
- Paris
- Lille
- Copenhagen
- Nuremberg
- Lausanne
- Torino

- **Asia (11)**

- Hong Kong
- Taipei
- Osaka
- Nagoya
- Yokohama
- Tokyo
- Kobe
- Busan
- Seoul
- Kuala Lumpur
- Singapore

AUTOMATED LIGHT METROS SYSTEMS

- **Middle East (1)**
 - **Dubai**
- **North America (2)**
 - **Vancouver**
 - **Las Vegas (People Mover)**
- **South America (1)**
 - **Sao Paulo**

Based on 2011 data

Vancouver Light Metro System



MAHALO

