OPPORTUNITY

ELECTRIC BUSES AND GRID SUSTAINABILITY

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HAWAIʻI’S CULTURE OF TECHNOLOGY AND SUSTAINABILITY

- We live on an island
- We readily adapt technology for advancement and sustainability
- Our monarchy brought electricity to ʻIolani Palace in 1886, five years before the White House was wired
- This gave birth to our utility, Hawaiian Electric
HONOLULU: A TRANSIT-RICH CITY

• TheBus, TheHandi-Van, and rail (under construction)
• 5th-highest in the nation in per capita transit travel
• Historic transit in Honolulu led to good land use in the dense urban core
• Returning to our strong transit background with enhanced complementary pedestrian and bicycle infrastructure
• Desire to electrify transit and transportation for health, sustainability, and the environment
WHY ELECTRIFICATION?

• All four Hawai‘i county mayors pledged to transform public and private ground transportation to 100% renewable fuel sources by 2045
• City and County of Honolulu’s Mayor Kirk Caldwell pledged to a complete public fleet transformation by 2035
• State of Hawai‘i mandated that 100% of electricity must be generated by renewable sources by 2045 and committed to the goals of the Paris Climate Agreement
THE PROBLEM: TRANSIT VERSUS THE DUCK

• Hawai‘i residents want more access to photovoltaic (PV) solar energy
  – Hawai‘i has the highest electricity rate in the US ($0.33/kWh)
  – In 2017, one out of seven occupied housing units had a solar photovoltaic system

• Grid saturation and grid management
  – The dreaded “duck curve”
  – Nobody is home to use the power that PV is producing
  – Oversaturation of grid and risk of damage to grid infrastructure

• Electrification of transportation (EOT) can save the day
  – Changes required to 100 years of good transit scheduling
  – WE CAN MAKE IT WORK!
THE SOLUTION: WIN-WIN-WIN FOR ALL

• **WIN: Transit**
  Electric buses can be charged outside of the utility’s peak-demand for a lower rate

• **WIN: Utility and Consumers**
  Electric buses spend down the mid-day abundance of solar power off the grid, letting the utility can permit more rooftop solar to consumers

• **WIN: Environment**
  The public benefits from zero-emission, environmentally-friendly buses

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**Buses, Solar Energy, and Energy Cost by Time of Day**