

# Electric Vehicle Fossil Fuel Use and Emissions in Hawaii

Hawaii Climate Commission Meeting

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UNIVERSITY  
of HAWAII®  
MĀNOA



**HNEI**

Hawai'i Natural Energy Institute

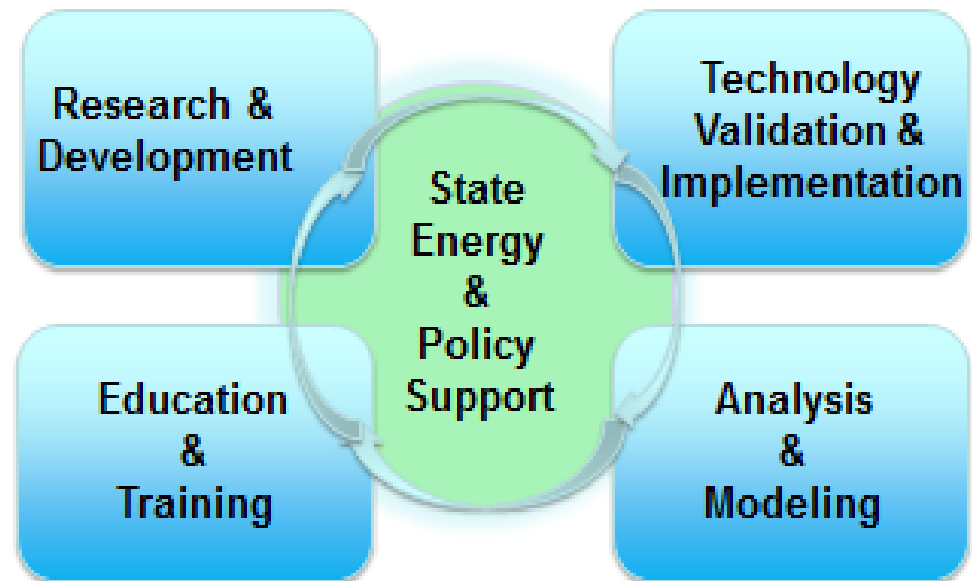
University of Hawaii at Mānoa

# ***Hawaii Natural Energy Institute***

- Organized Research Unit at the University of Hawaii
- Established by the Legislature in 2007
- HNEI leads significant public-private partnerships focused on the development, testing & evaluation of emerging energy technologies to reduce Hawaii's dependence on fossil fuels

## **Programs:**

- **Alternate fuels**
- **Renewable generation**
- **Fuel cells & batteries**
- **Energy efficiency & Transportation**
- **Grid Integration**



# *Fact or Myth?*

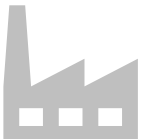
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- Electric Vehicle (EV) cost?



- **Electric power in Hawaii – what's the impact on EVs?**

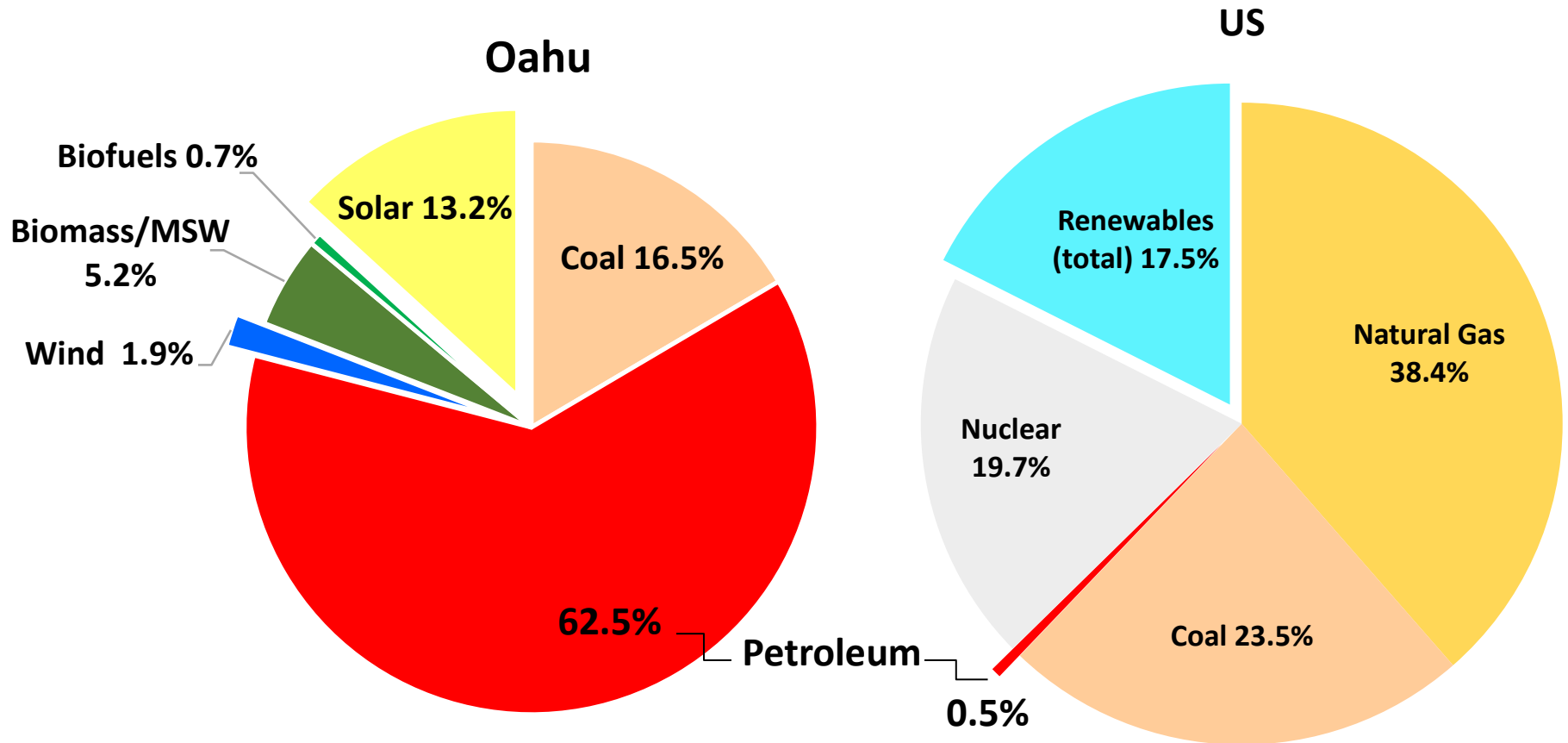


- Manufacturing emissions?

- Battery second life?



# *Electricity Generation in Hawaii versus US, 2019*



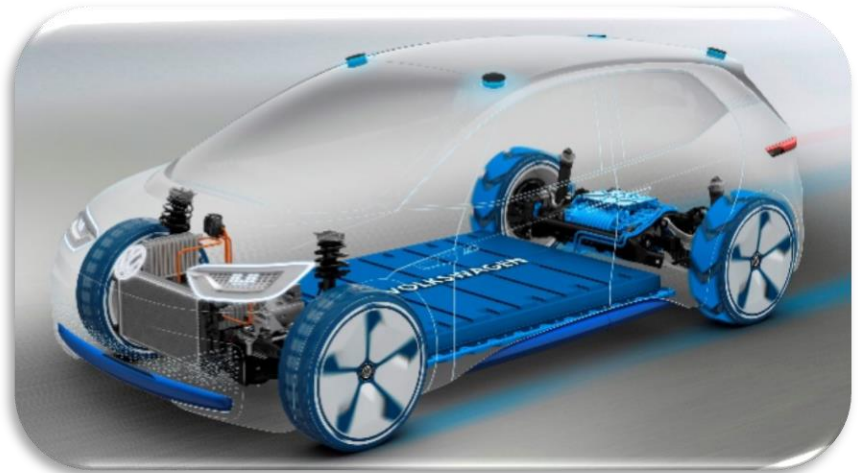
K. McKenzie, Electric Vehicles in Hawaii: Fossil Fuel Use and Emissions, Hawaii Natural Energy Institute, University of Hawaii, October 2020.

# ***Energy Efficient***

**Gasoline vehicles only convert about 17%–21% of the energy stored in gasoline to power at the wheels.**



**EVs convert over 77% of the electrical energy from the grid to power at the wheels.**

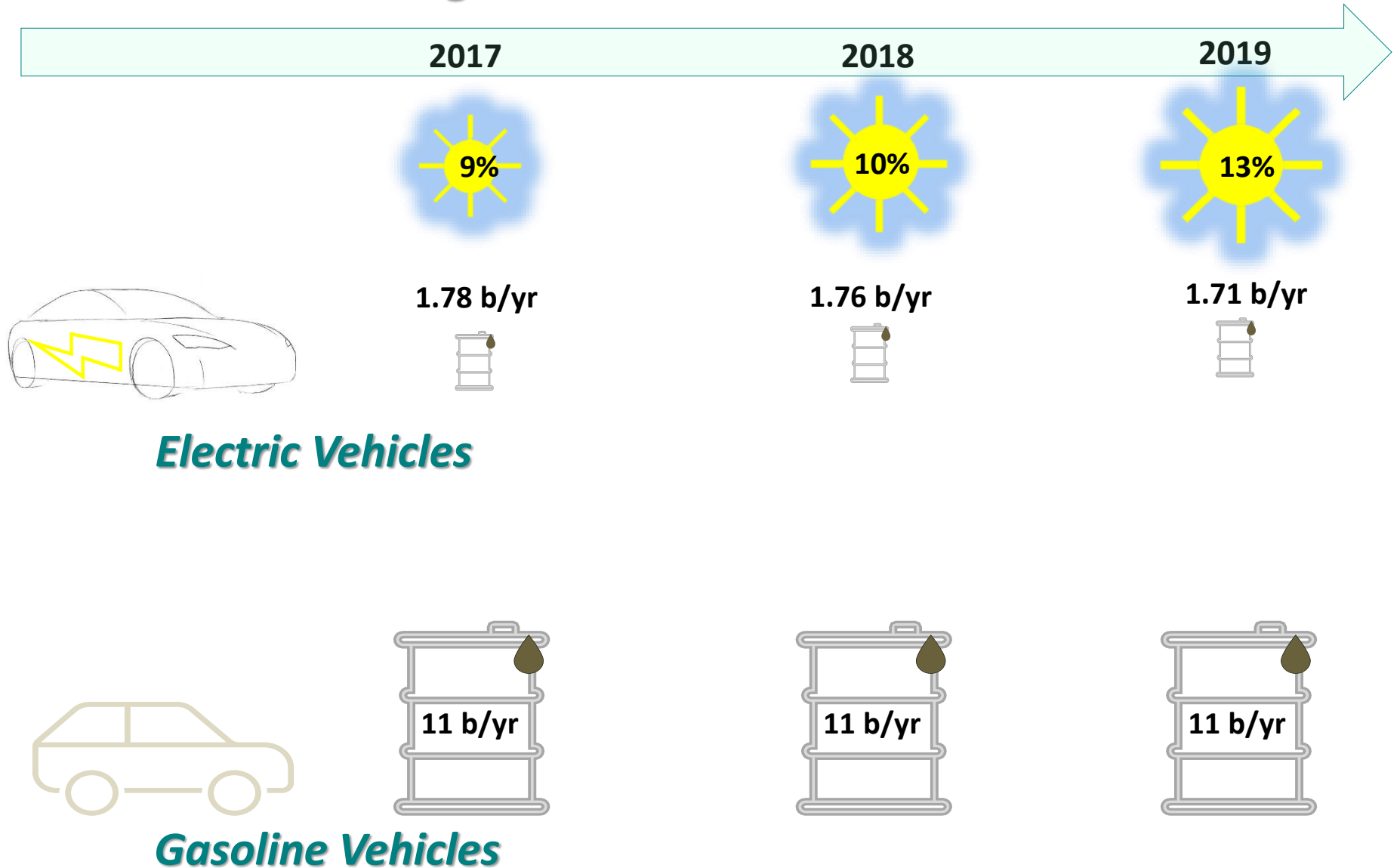


**EVs are about *4 times* more efficient.**

**Source: US Department of Energy.**

# Fossil Fuel Use (Oahu)

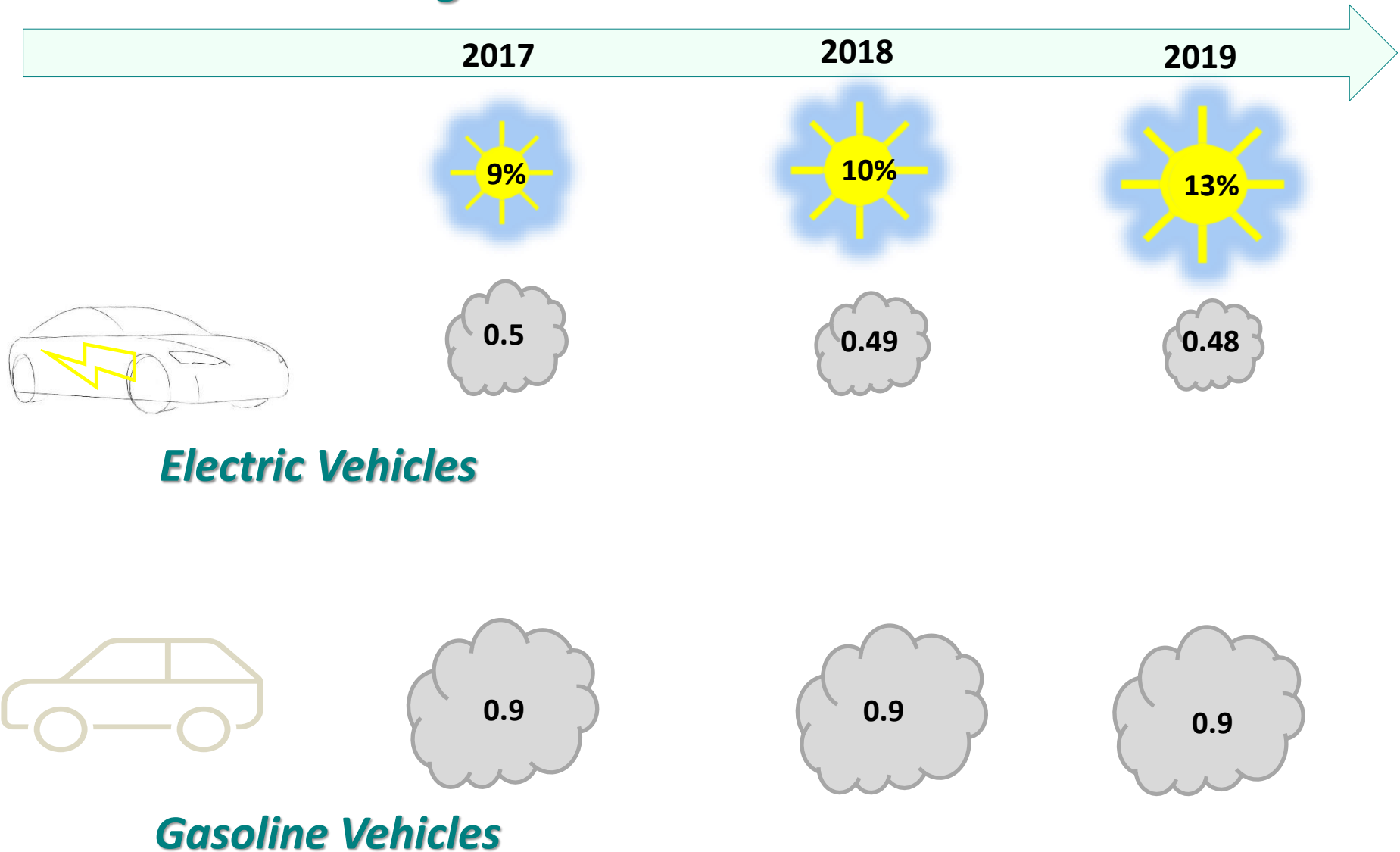
## *Passenger EVs and Gasoline Vehicles*





# CO<sub>2</sub> Emissions (Oahu)

## *Passenger EVs and Gasoline Vehicles*





# ***Energy SECURITY and RESILIENCY***

**EVs can run on renewable energy generated in Hawaii, can increase wind and solar integration, reduce our dependence on imported fossil fuel for transportation *and* electricity, and reduce the billions of dollars leaving the state each year.**





**Mahalo!**

***For more information:***

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