EVs and IGP

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Leg Update

- **HB552:** sets a planning goal to transition 100% of state-owned passenger cars to zero-emissions vehicles by 2030, and all other state-owned light-duty vehicles by 2035
- **HB1142:** allocates 3 cents of the barrel tax to fund the EV charging system rebate program administered by Hawai‘i Energy, with oversight by the PUC
- **HB424:** sets a preference for state employees to rent an EV or a hybrid vehicle when traveling on government business
- **SB932:** helps state agencies use energy savings to finance the purchase or lease of EVs and EV-charging infrastructure
  - Main focus on expanding GEMs

EV Goals

2030

- State light-duty passenger cars 100% ZEV (HB 552 (2021)

2035

- State light-duty fleets 100% ZEV (HB 552 (2021))
- Honolulu City & County fleets 100% renewable (Bill 65 (2020) and 2017 county pledge))
- Maui County fleets 100% renewable (2017 county pledge)

2045

- 100% renewable ground transportation (2017 county pledge)
- State carbon neutrality target (HRS 225P-5)

2050

- 100% ZEV sales of medium and heavy duty vehicles (2020 multi-state MOU)

EVs in IGP Planning

- Planning Scenarios
- Charging Assumptions

Colorado/Xcel (filed March 31, 2021)

Planning Scenarios

- Base case: Market forecast, based on utility-led Transportation Electrification Plan
- Low case: Same as base case, but assumes lower usage per vehicle
- High case: Assumes faster adoption of EVs and electrification of space and water heating, based on **state-led Colorado Greenhouse Gas Pollution Reduction Roadmap** targeted at meeting state GHG emissions reductions goals

*Separate forecasts for light-duty and medium-/heavy-duty vehicles

Colorado/Xcel (filed March 31, 2021)

Charging Assumptions

Assumes managed charging beginning in 2022 for all scenarios

- Xcel transitioning to default residential TOU rates
- Managed charging program going into effect soon
  - Static optimization: customers select preferred charging schedule from several options outside of system peak and Xcel incorporates staggering into the schedule; customers receive rebate
  - Dynamic optimization (i.e. smart charging) pilot: Xcel communicates demand management instructions to automakers, which communicate directly to vehicles charging at home; a new charging schedule is set each time the customer plugs in; customers receive sign-up incentive and annual credit

*Separate charging profiles for light-duty and medium-/heavy-duty vehicles

California

Planning Scenarios

- Medium and High: Market forecast, based on Commission's demand forecast in annual Integrated Energy Policy Report
- 3 Additional Scenarios: Based on **Commission's Deep Decarbonization Report**, targeted at meeting state GHG emissions reductions goals
  - High biofuels
  - High electrification
  - High hydrogen

California

Charging Assumptions

- 2020 IEPR report includes managed charging scenarios for EVs
- Also exploring **V2G** programs in other dockets

Hawai‘i – Planning Scenarios

Base Case: Market forecast, based on EoT roadmap (and adjusted downward

*Accounts for LDVs and eBuses, but not all medium- and heavy-duty vehicles

	Oʻahu	Hawaiʻi	Maui County	Maui Island	Molokaʻi	Lānaʻi
2045	51.55%	39.56%	58.31%	59.30%	29.77%	39.02%
2046	56.67%	43.40%	61.15%	62.12%	32.78%	42.85%
2047	61.81%	47.40%	63.90%	64.84%	35.80%	46.66%
2048	66.47%	51.40%	66.54%	67.46%	38.77%	50.38%
2049	70.42%	55.31%	69.12%	70.01%	41.64%	53.98%
2050	73.63%	59.46%	71.66%	72.54%	44.38%	57.38%

Hawai‘i – Planning Scenarios

Proposed Bookend Sensitivity

- Instead of a 30% mark up/down, the slower and faster customer technology adoption bookends can be anchored to certain policies and program proposals that have been discussed in the respective dockets for DER, EV, and EE. A high load sensitivity was also added to further study how the resource plan and system cost changes under this condition.
- Further stakeholder discussions can help to decide the appropriate driver for the level of adoption that is assumed in the low and high bookends.

Assumption	Slower Customer Technology Adoption	Base	Faster Customer Technology Adoption	High Load
DER	Market Forecast	HE Company Proposal	DER Parties Proposal	Market Forecast
Electric Vehicles	EV--	Market Forecast	EV++	EV++
Energy Efficiency	EE--	Market Forecast	EE++	EE--
Time-of-Use	None	Managed EV	Managed EV	None

Recommendations

Planning Scenarios

- Include 100% ZEV by 2045 as high-end bookend
- Develop medium- and heavy-duty vehicle forecasts

Charging Assumptions

- Align managed charging assumptions with EoT and DER dockets

Recommendations

Future of EVs in IGP

- Adopt universal TOU rates and managed charging program
- Begin planning for V2G to optimize EVs as a resource
- Include EVs as a selectable resource in RESOLVE capacity expansion modeling

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