PRS

Draft

High Level Modeling Overview

Deterministic Portfolio Optimization – (For All Alternative Scenarios)

- Portfolio solves for 1 future using expected value assumptions/inputs for each data point in the model
- The solve is optimized/valued against constraints:
  - CCA
  - CPP
  - Transport
  - Resource and Volumetric availability

~~Stochastic Portfolio Optimization – (For PRS only)~~

- Portfolio solves for 5 futures simultaneously representing a distribution of choices across varying load profiles, prices and constraints to create the final resource selections
- Avista may test multiple additional futures to arrive at the final PRS

Monte Carlo of a single portfolio – (Selected Scenarios)

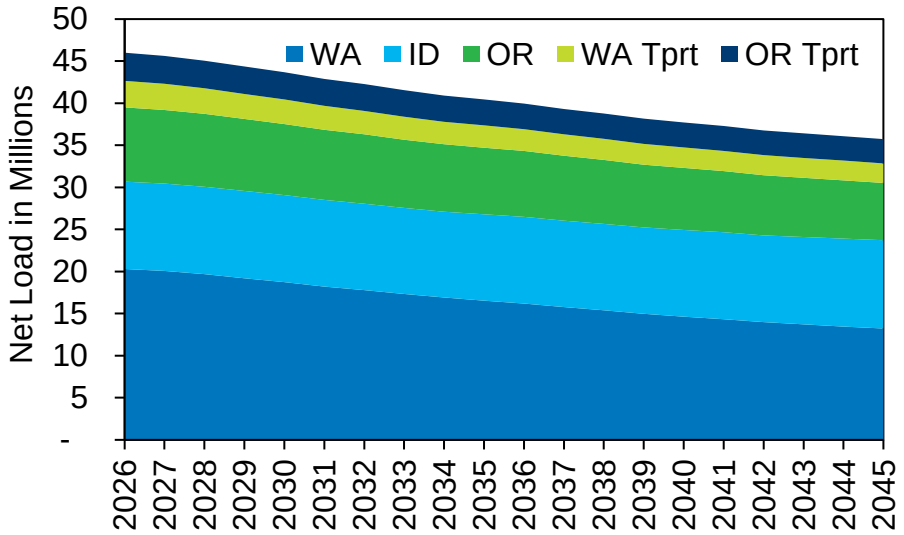
- CROME locks down the resources selected in each portfolio scenario
- A set of 500 Monte Carlo simulations of load, weather, fuel prices and availability
- will be run to measure variation of prices, risk and availability to serving load and meeting required constraints

Monte Carlo portfolio optimization – (PRS Unconstrained)

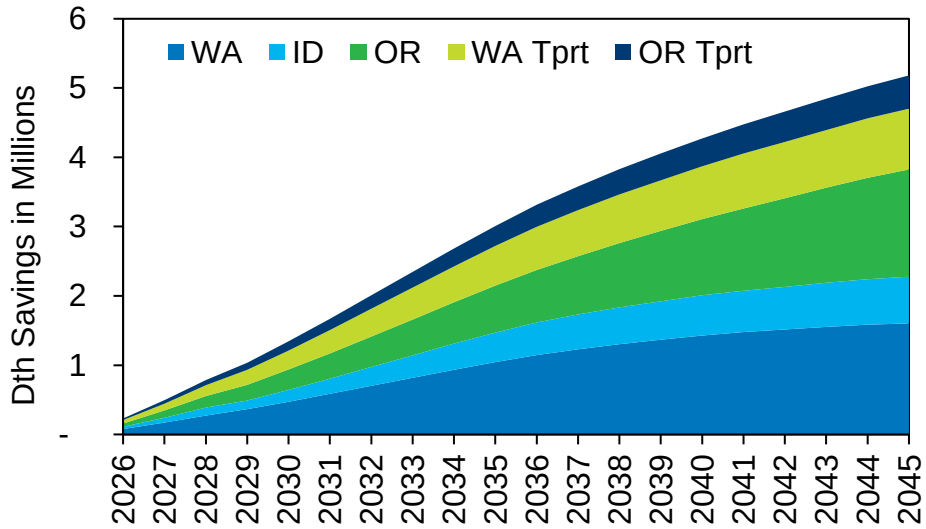
- 500 individual portfolios
- Provide Statistics of 500 portfolio resource selections

Net Load and Energy Efficiency

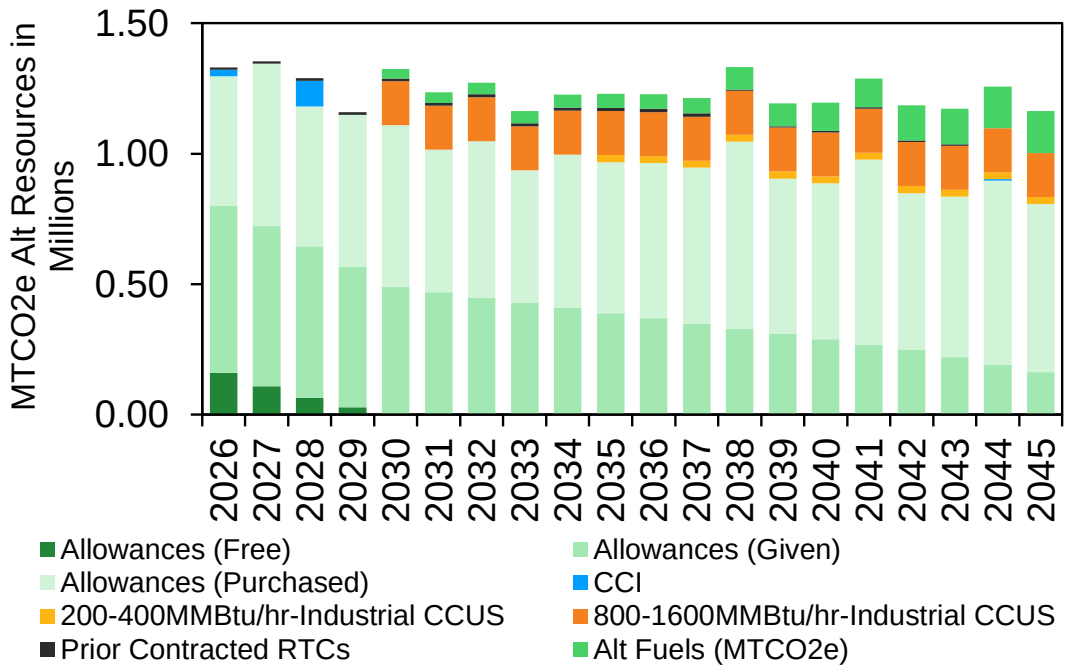
Avg. Net Load After EE

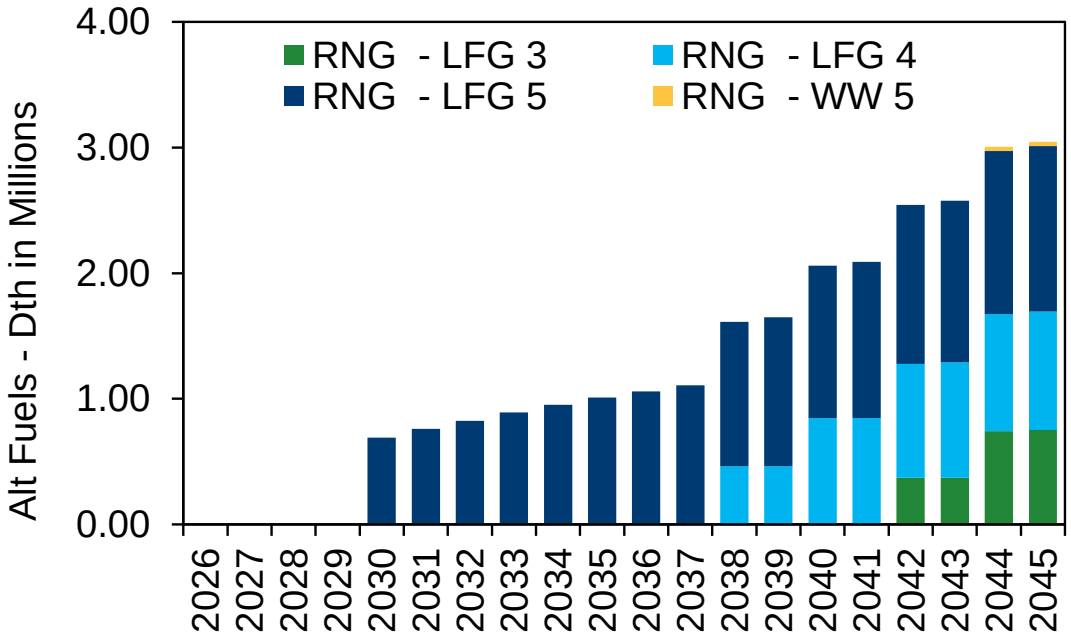


EE Cumulative Reduction

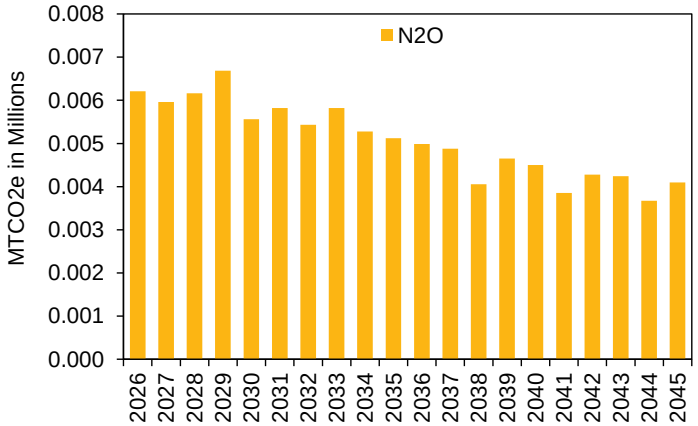


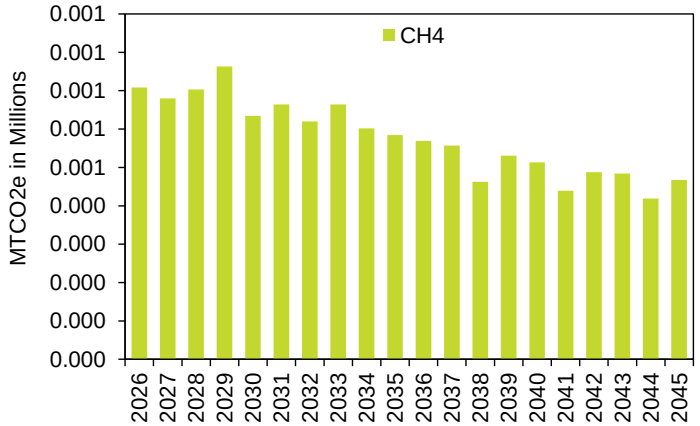
Selected Resources

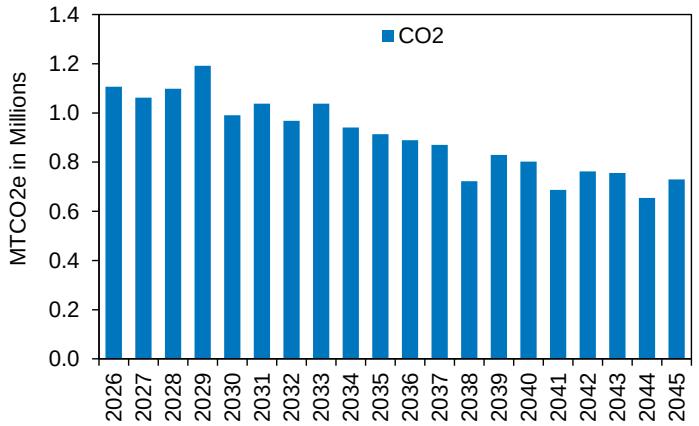


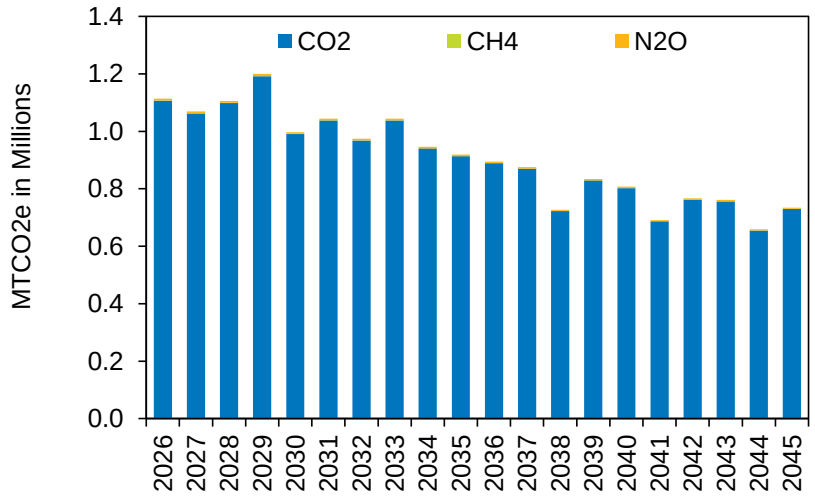


Net Emissions



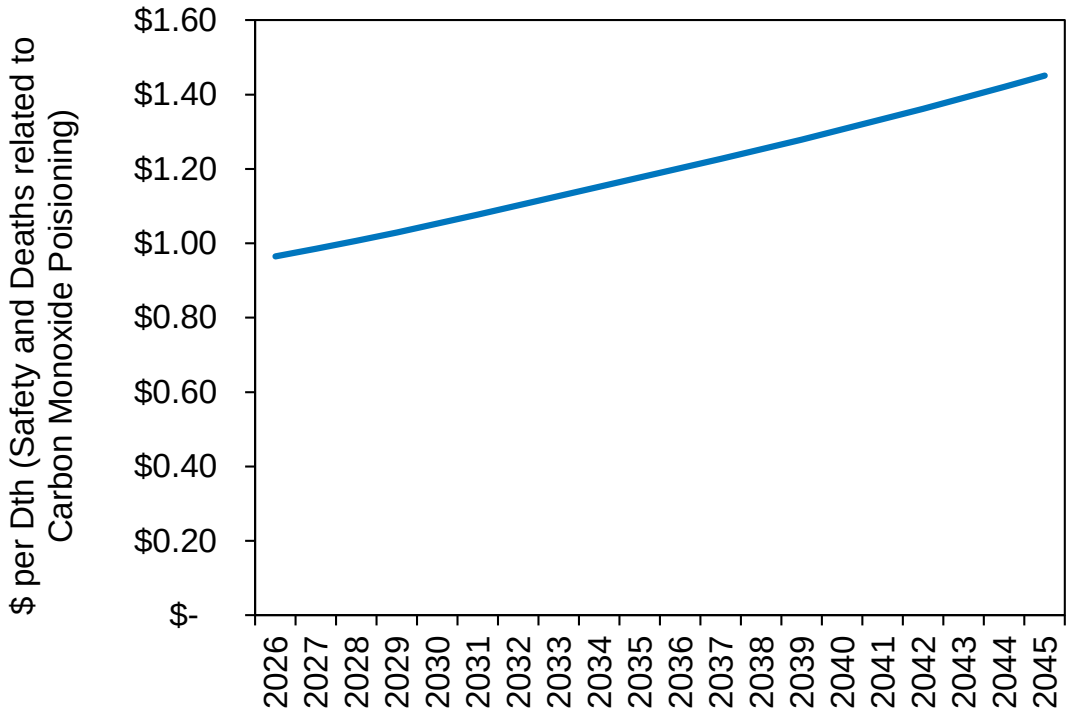




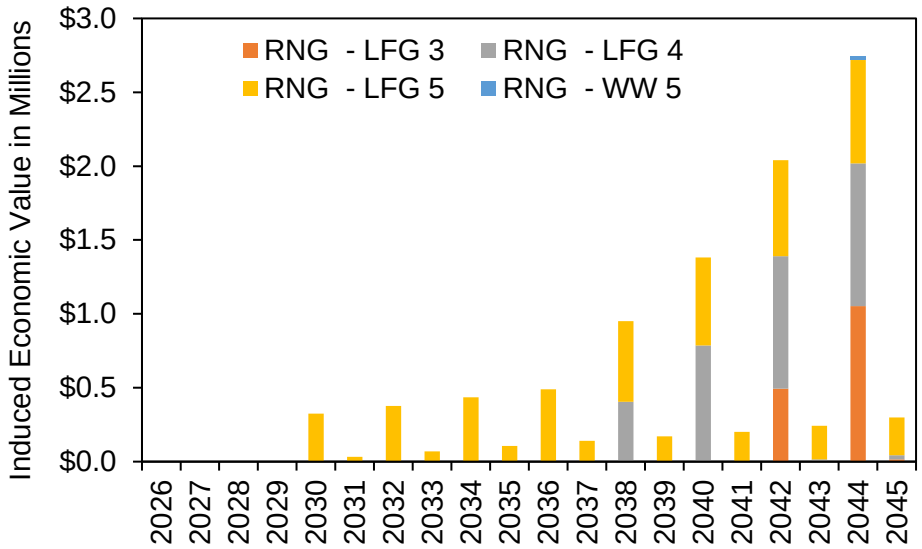


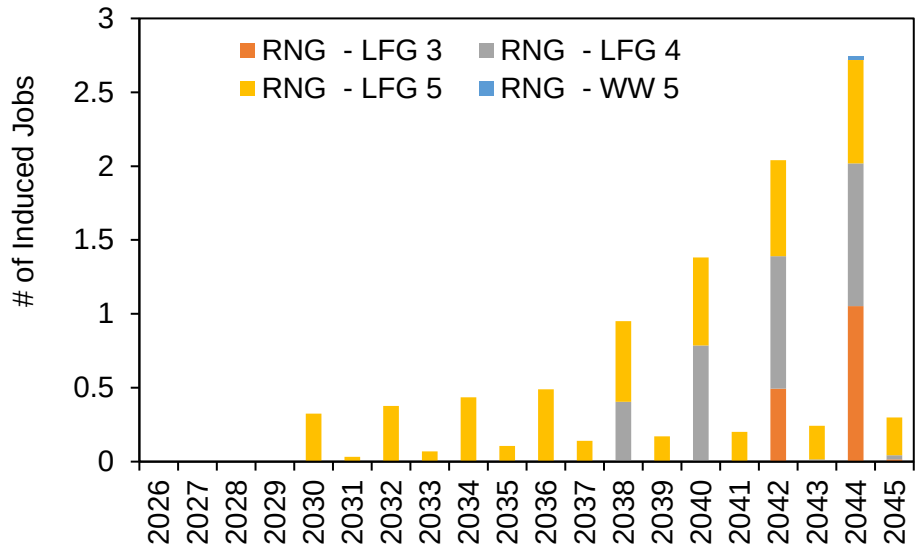
NEI

- Added to the Price of Natural Gas
  - Safety incidents
  - Carbon monoxide poisoning
- Social Cost of Carbon
- Emissions



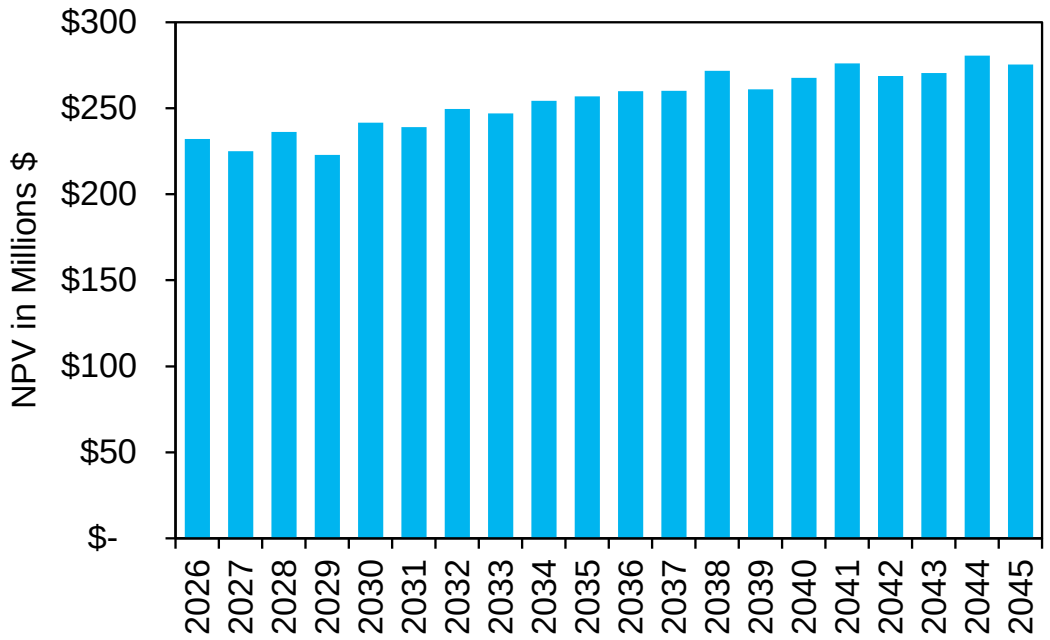
Economic Benefit of RNG Selected

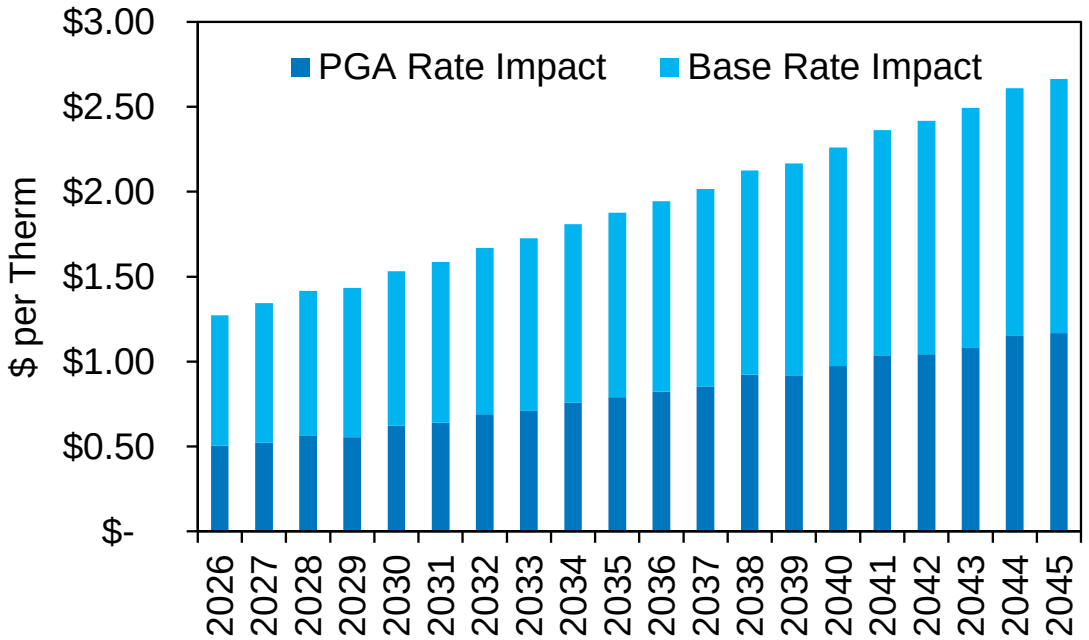




Source: IMPLAN based on selected resources

System Cost and Rate Impact





*Does not include all Tariff Riders

Alternative Scenarios and Sensitivities

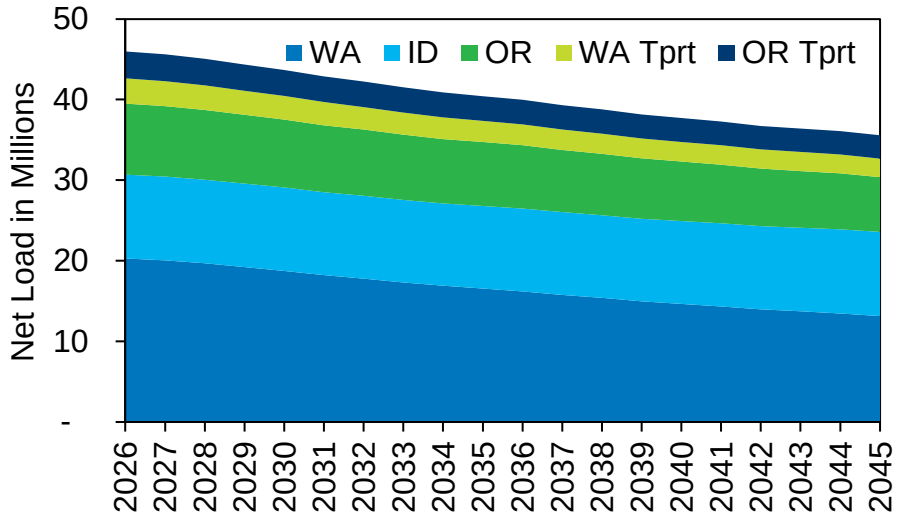
DRAFT

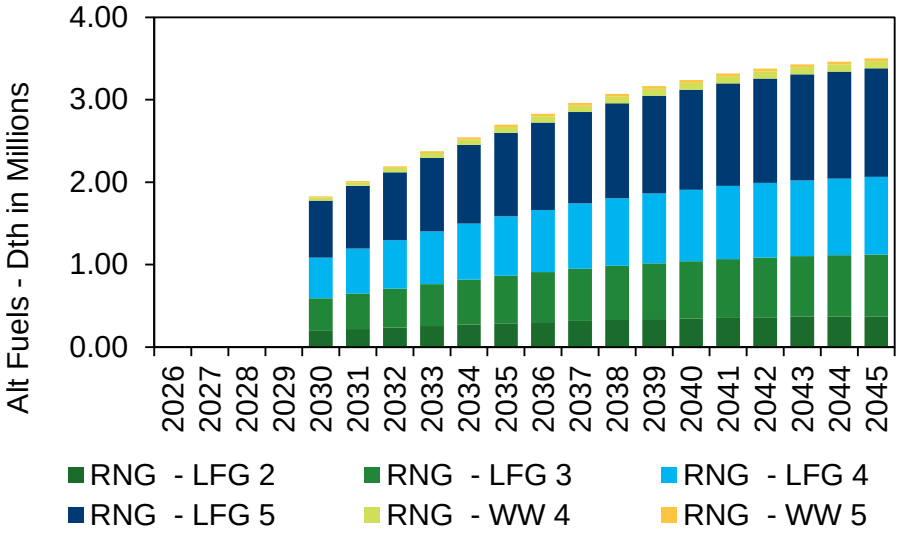
January 22, 2025

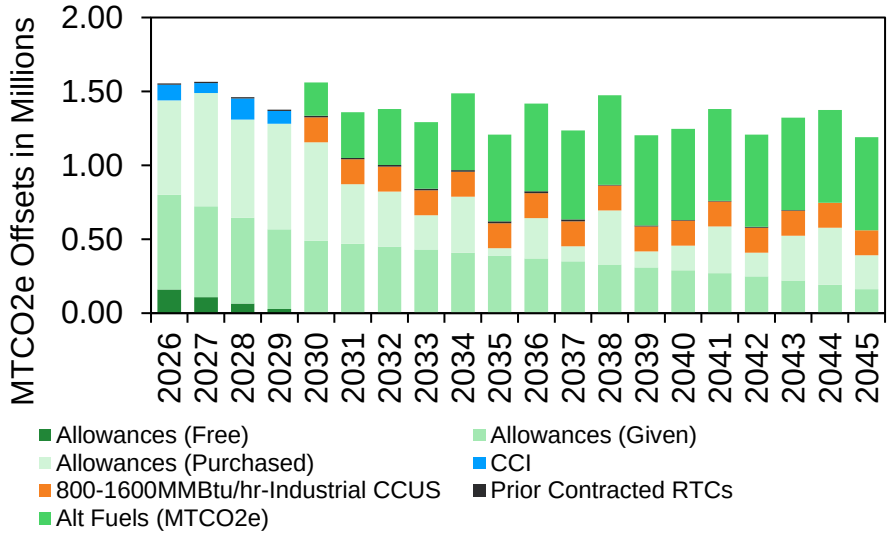
Alternative Scenarios

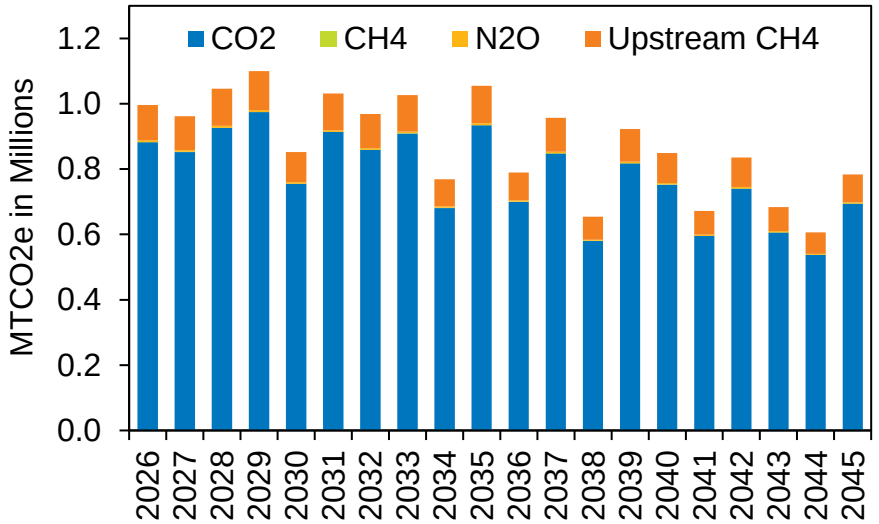
Scenario Description	Changes from PRS
SCC @ 2.5%	SCC in All Jurisdictions

Social Cost of Carbon



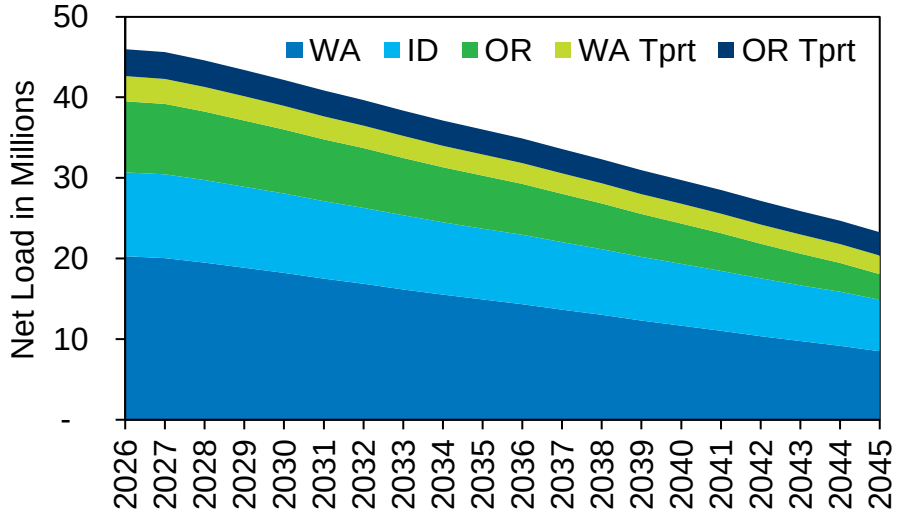


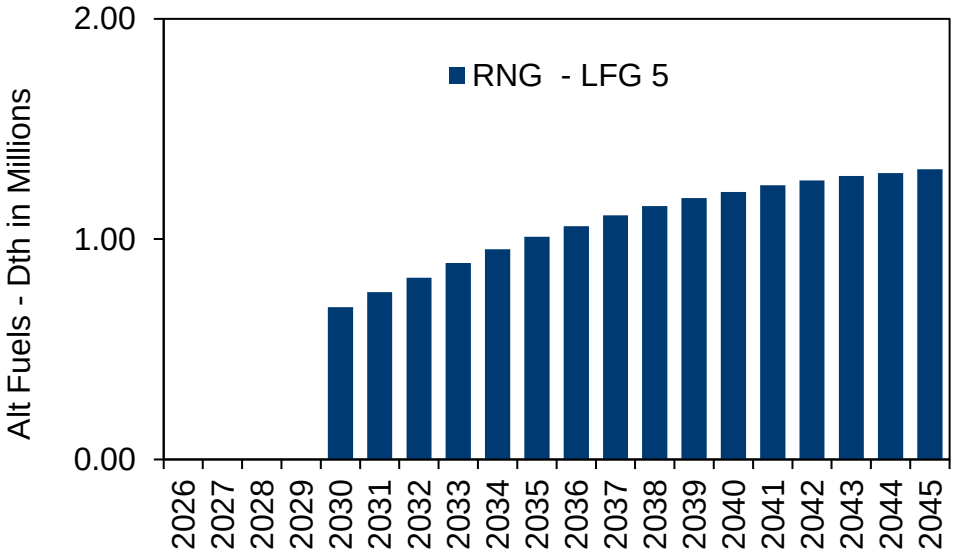


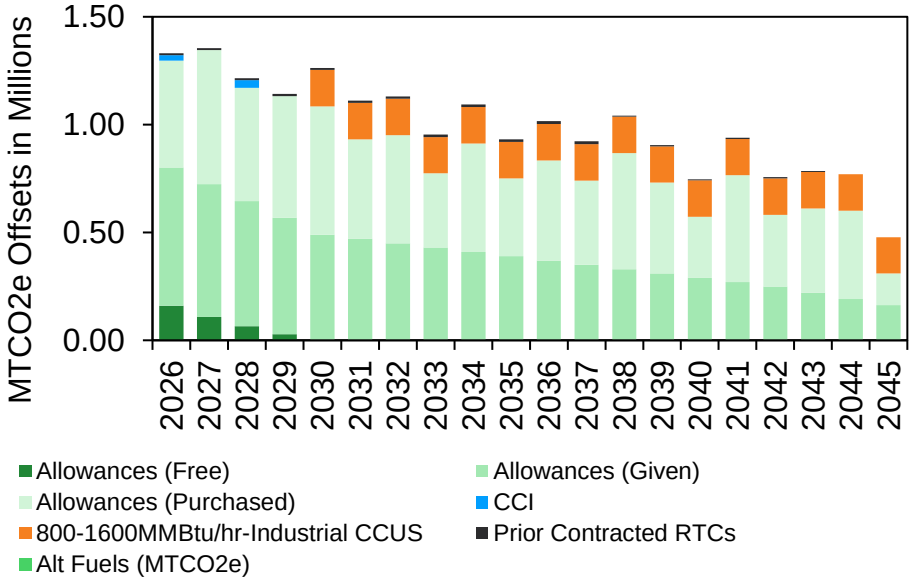


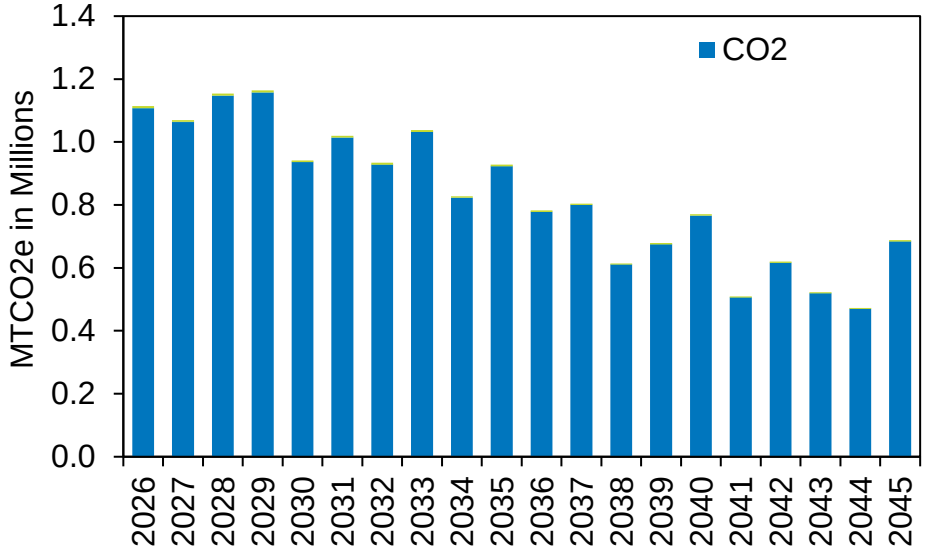
Scenario Description	Changes from PRS
Hybrid Heating from PRS Loads	• **LDC Heating @ 38º F** • **Avista Electric Resources for New Loads (ID/WA)**

Hybrid Heating



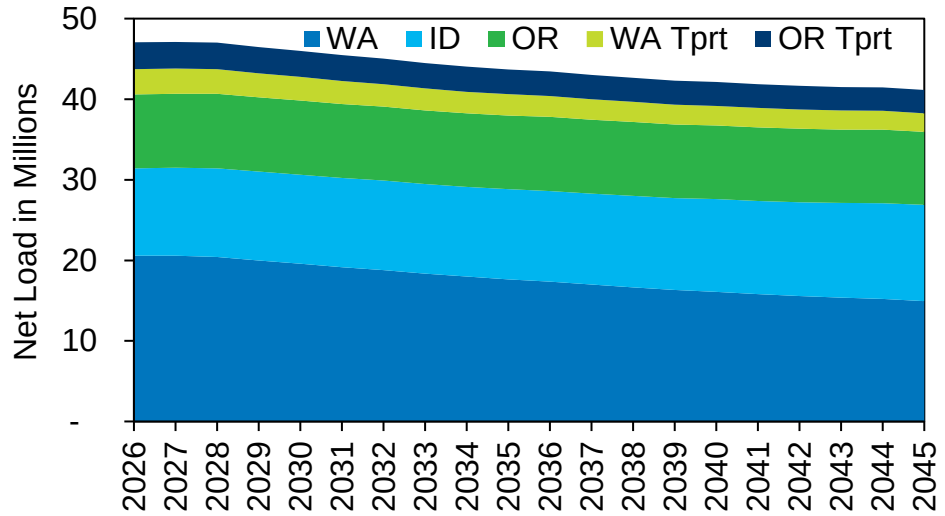


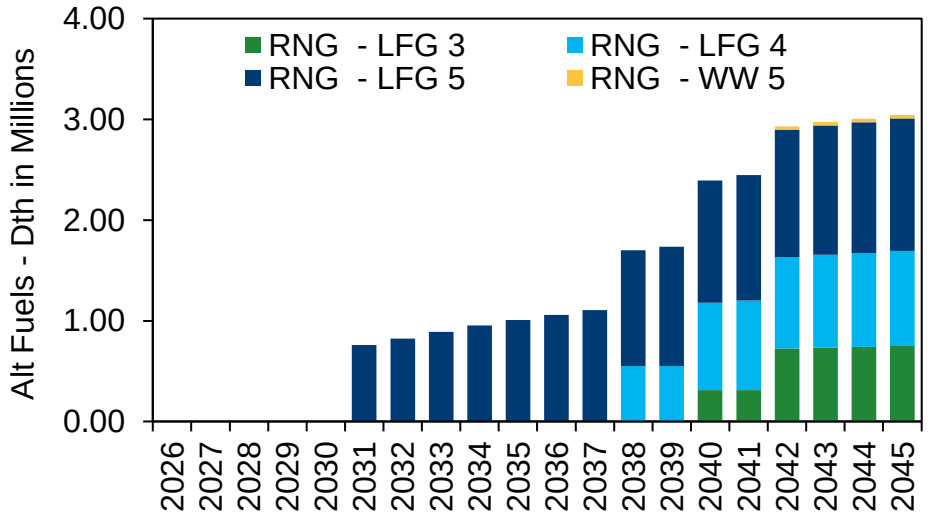


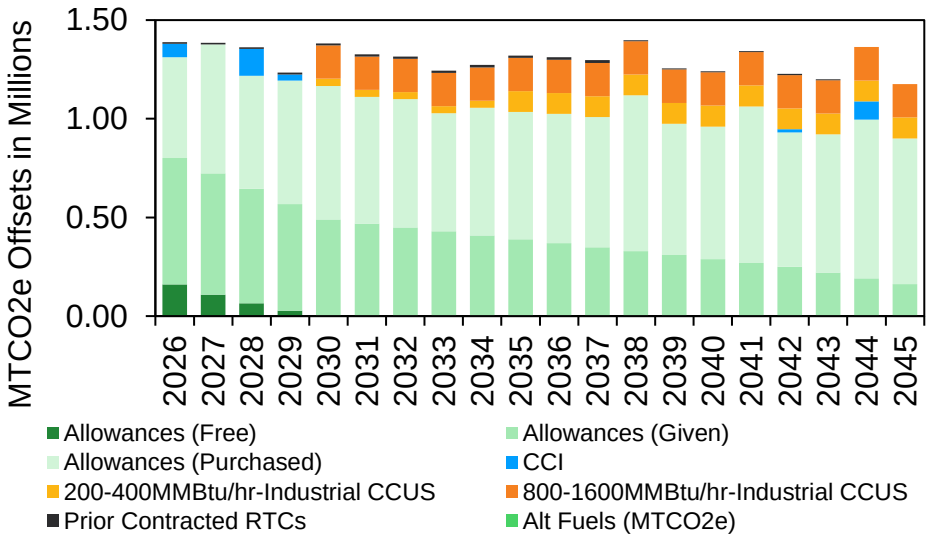


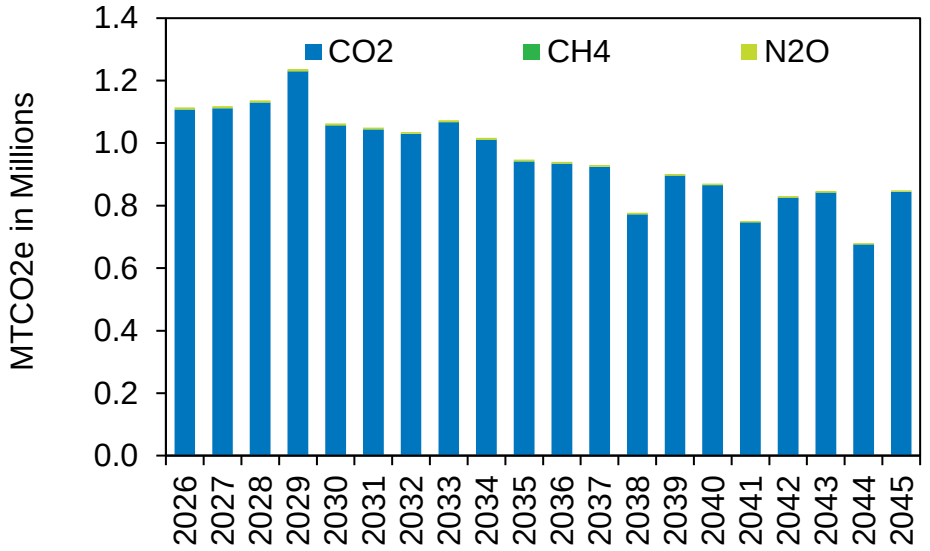
Scenario Description	Changes from PRS
Higher than expected load growth	• **High Load Demand**

High Growth



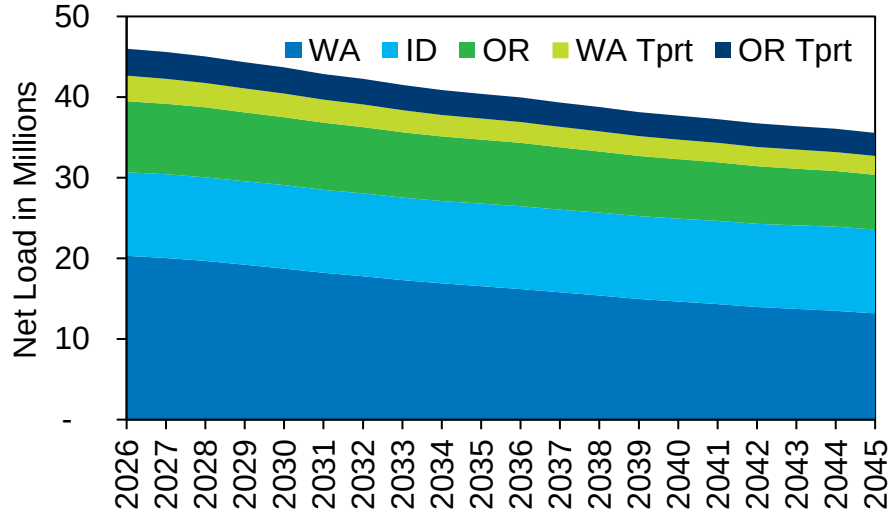


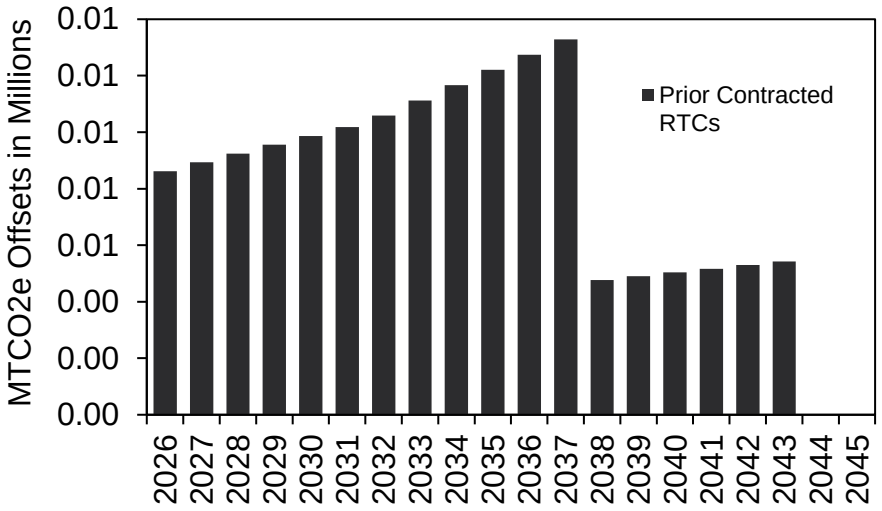


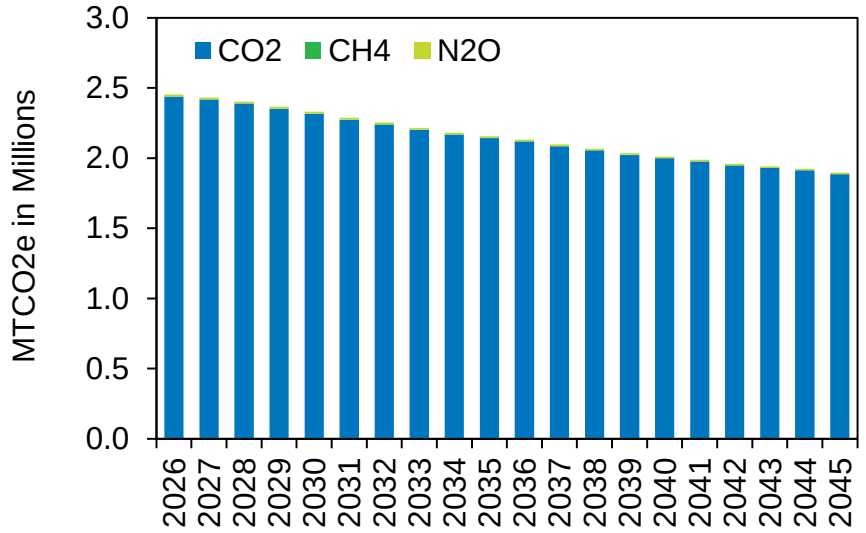


Scenario Description	Changes from PRS
Climate Programs Cost Impact to System	**No Climate Programs (CCA,CPP)**

No Climate Programs

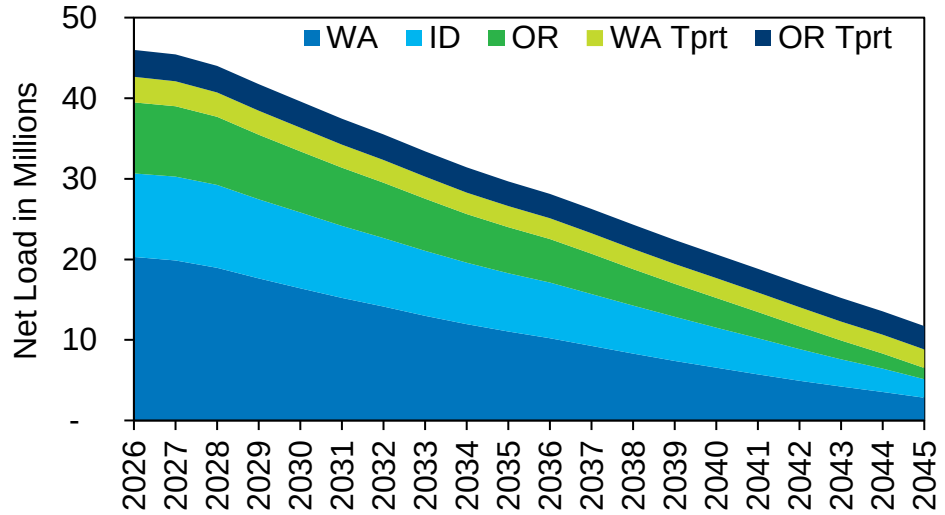


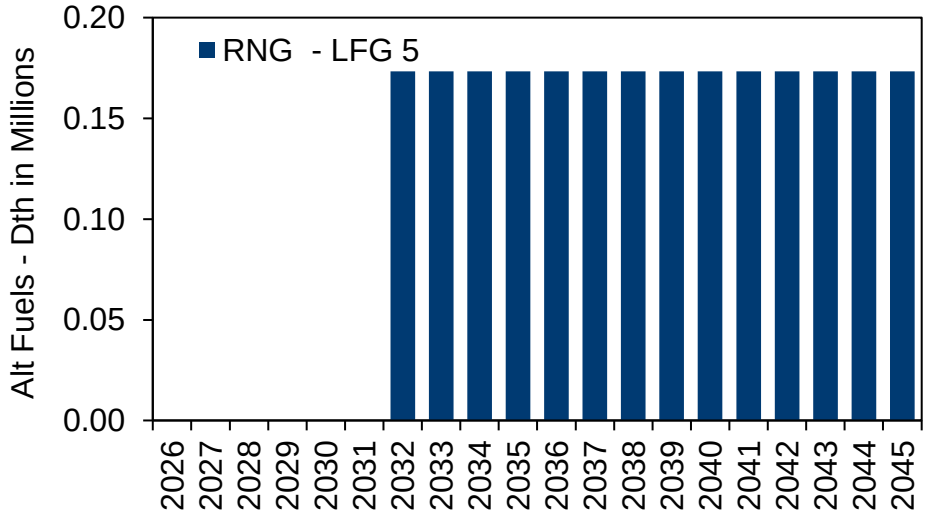


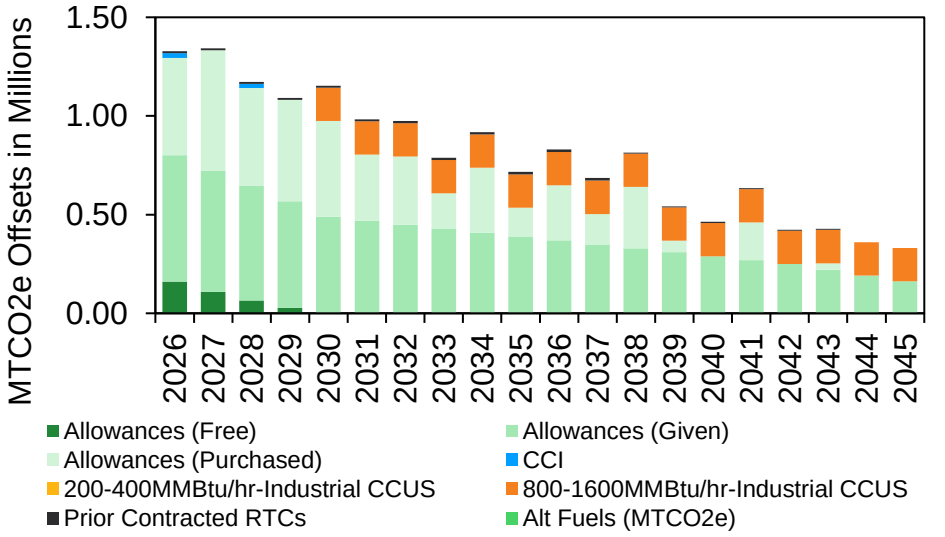


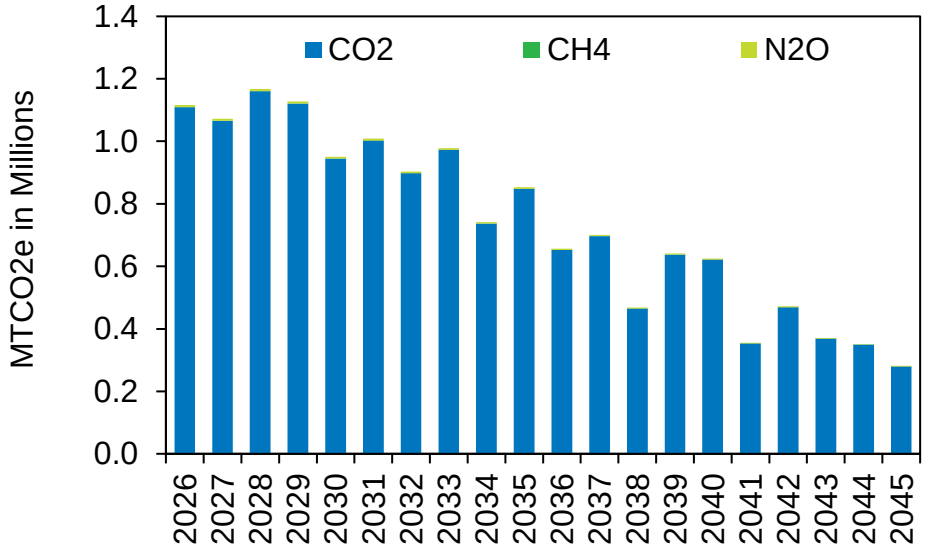
Scenario Description	Changes from PRS
Higher than expected load shift to the power grid	• **Lowest Load Demand**

High Electrification



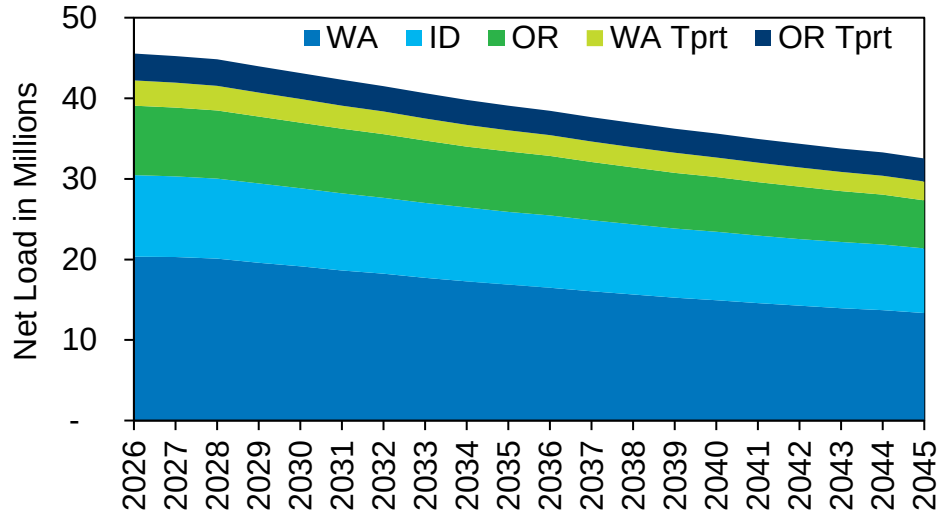


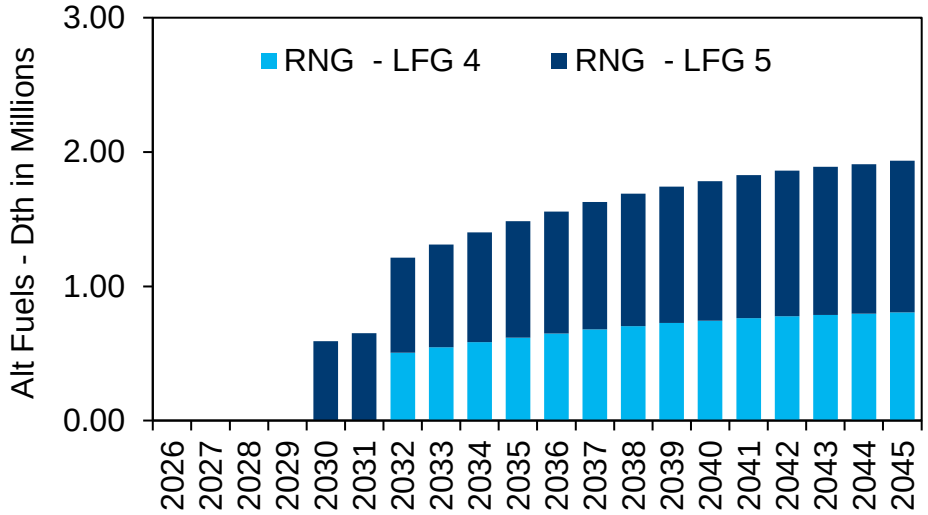


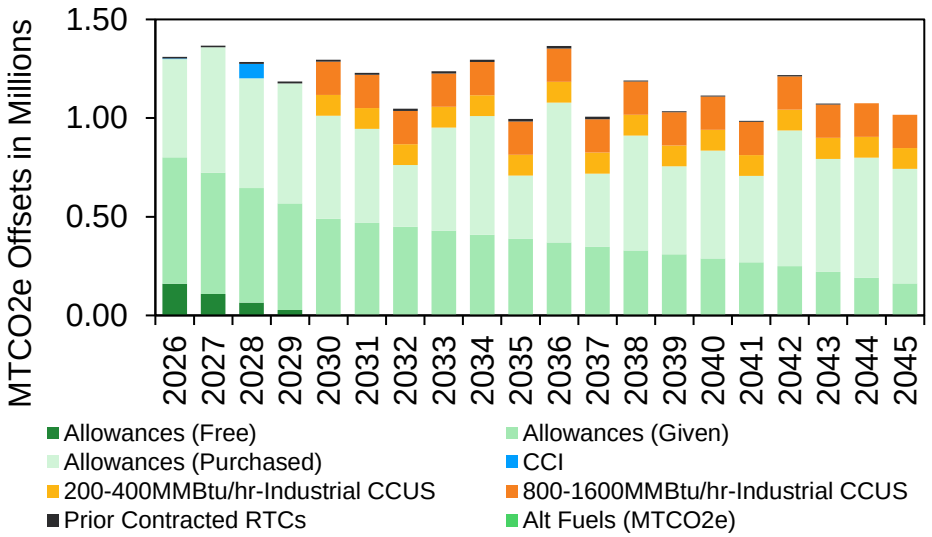


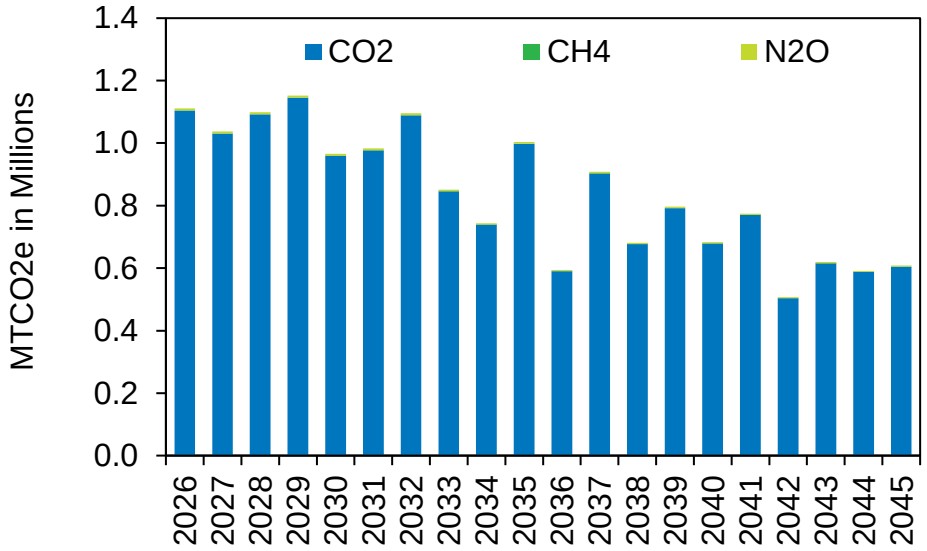
Low Natural Gas Use

Scenario Description	Changes from PRS
Low Natural Gas Use	• RCP 8.5 Weather • 95th Percentile of Natural Gas Prices • 95th Percentile of Allowance Prices • Low Alt Fuel Volumes – 5th Percentile • High Alt Fuel Prices – 95th Percentile





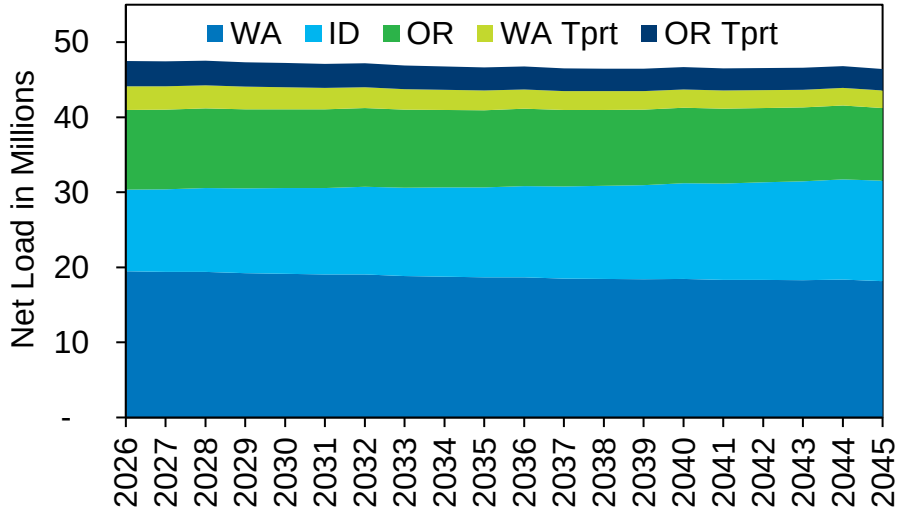


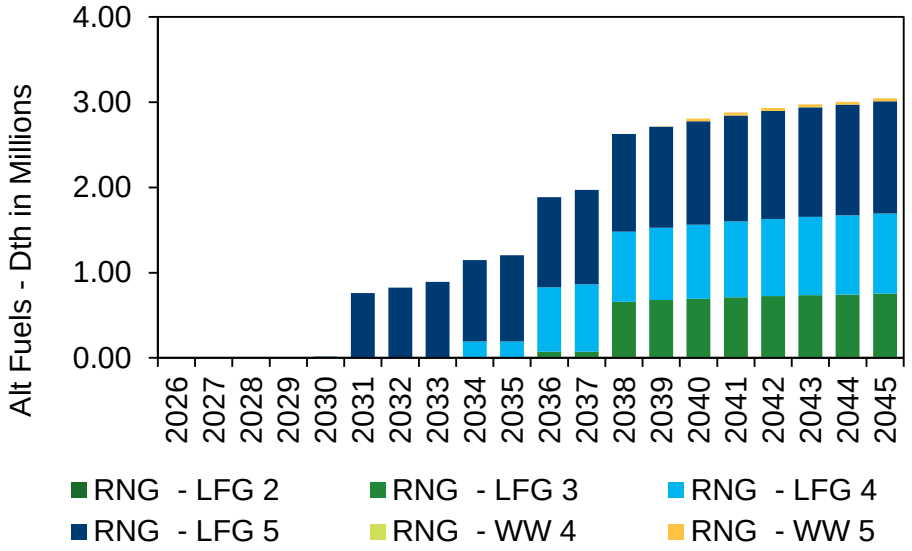


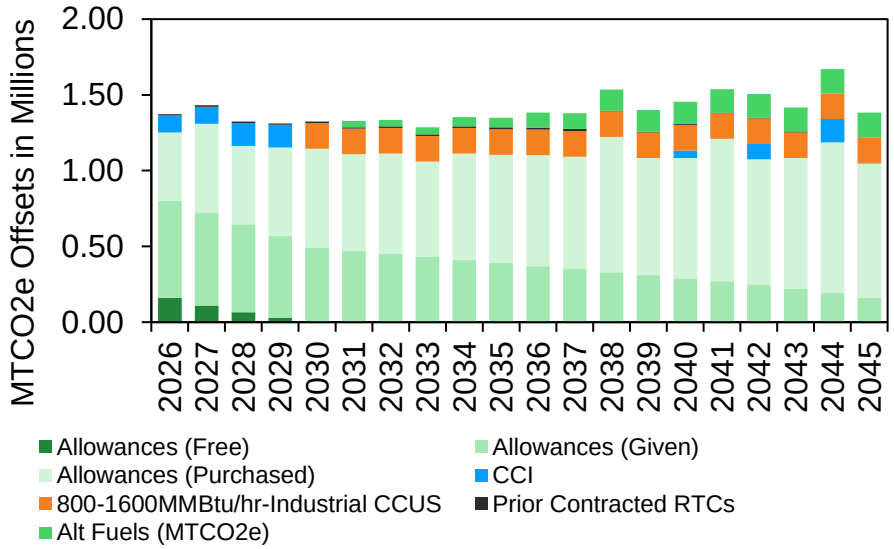
Sensitivity

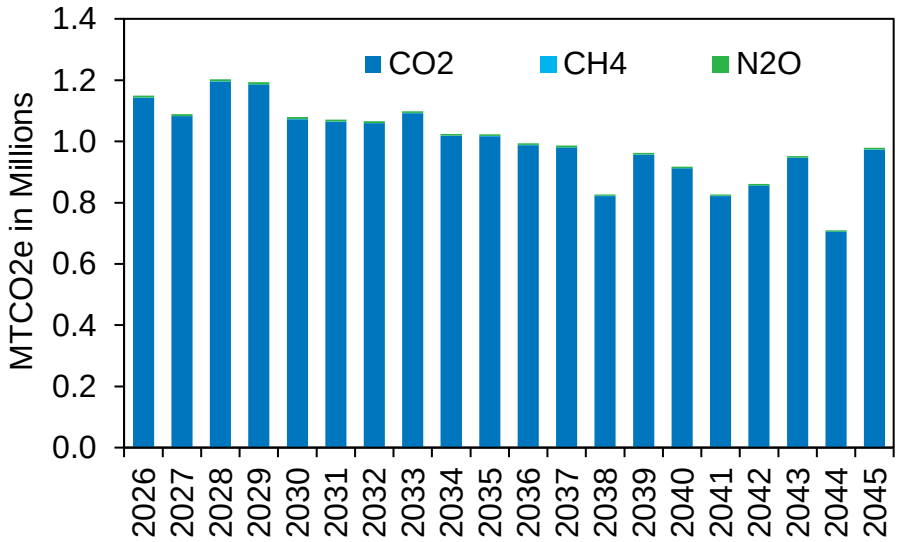
Scenario Description	Changes from PRS
Average Case with Historic Use and 20 Year Rolling Daily Weather	• 3 Year Use Per Customer • 20 Year Rolling Daily Weather

Average Case



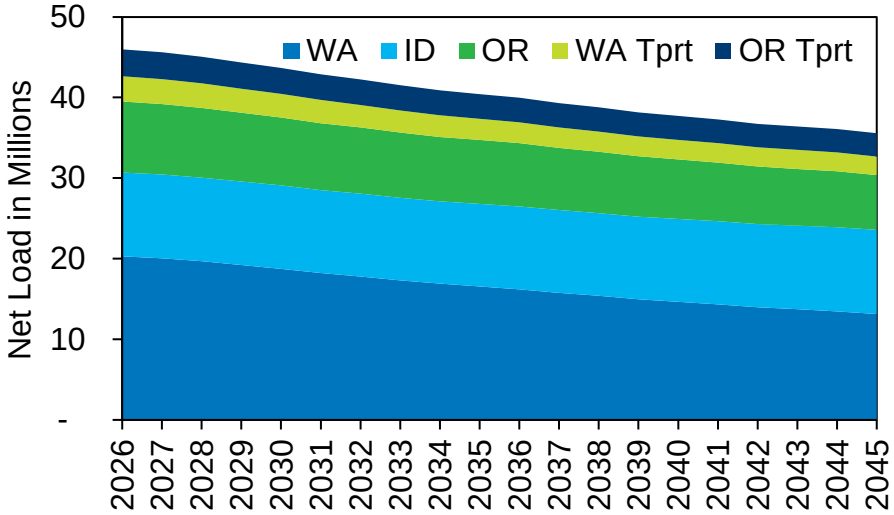


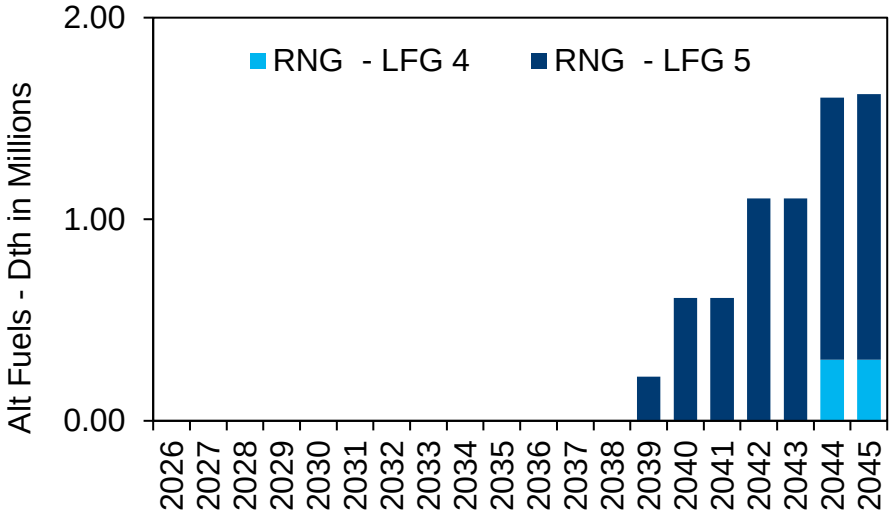


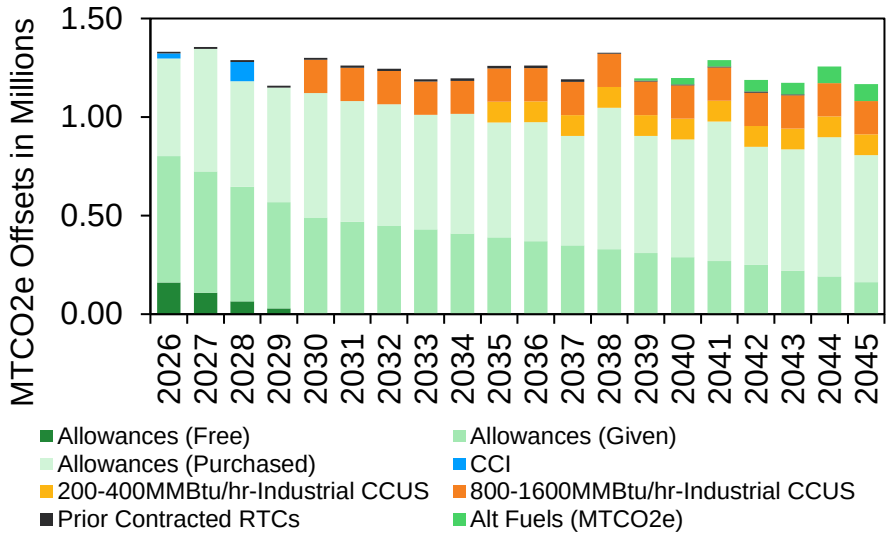


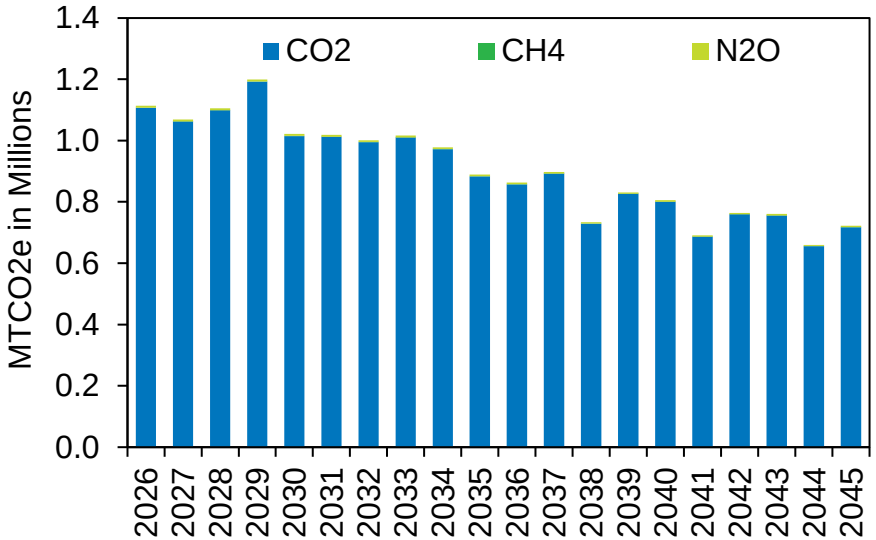
Scenario Description	Changes from PRS
High Cost of Alternative Physical Fuels	• High Prices of RNG,SM,H2

High Alternative Fuel Costs



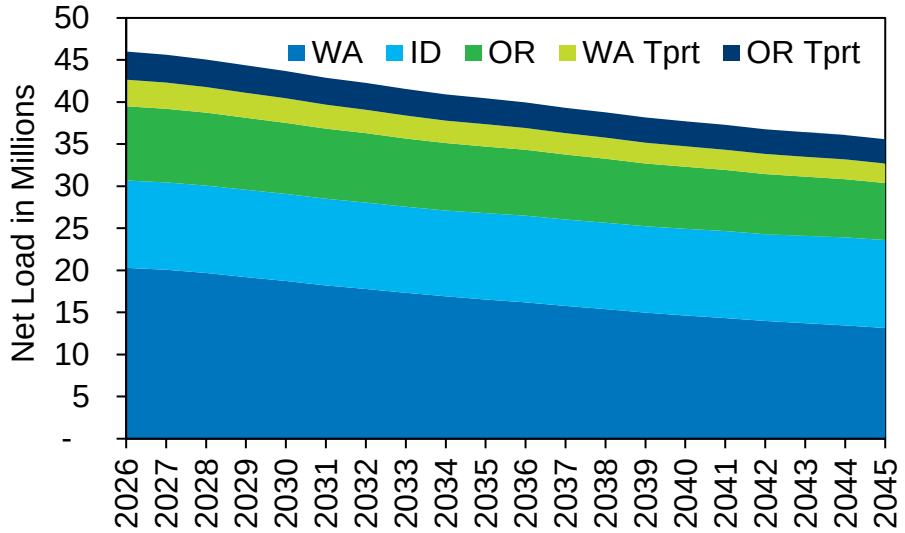


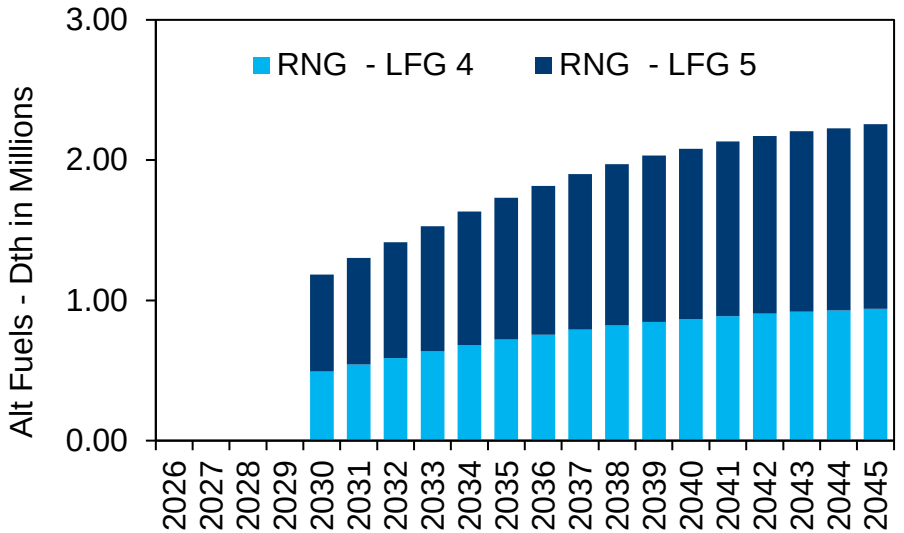


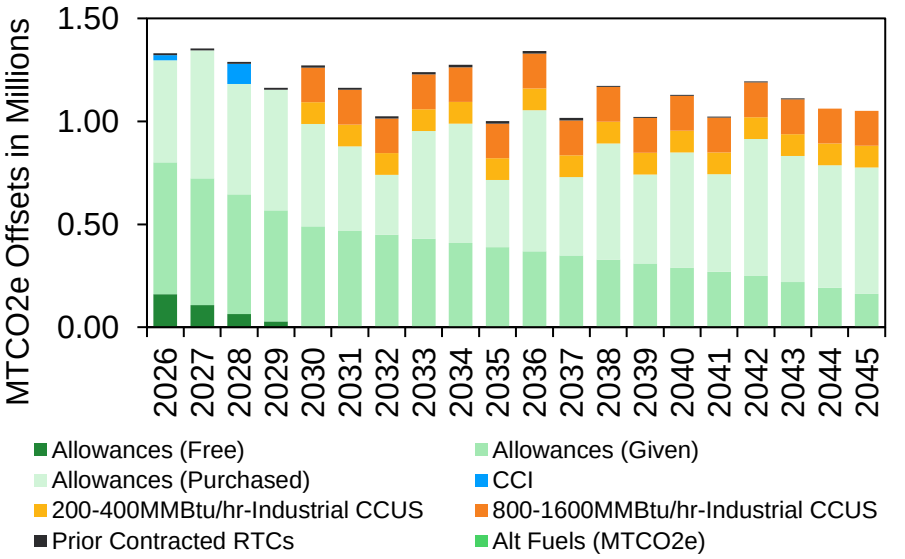


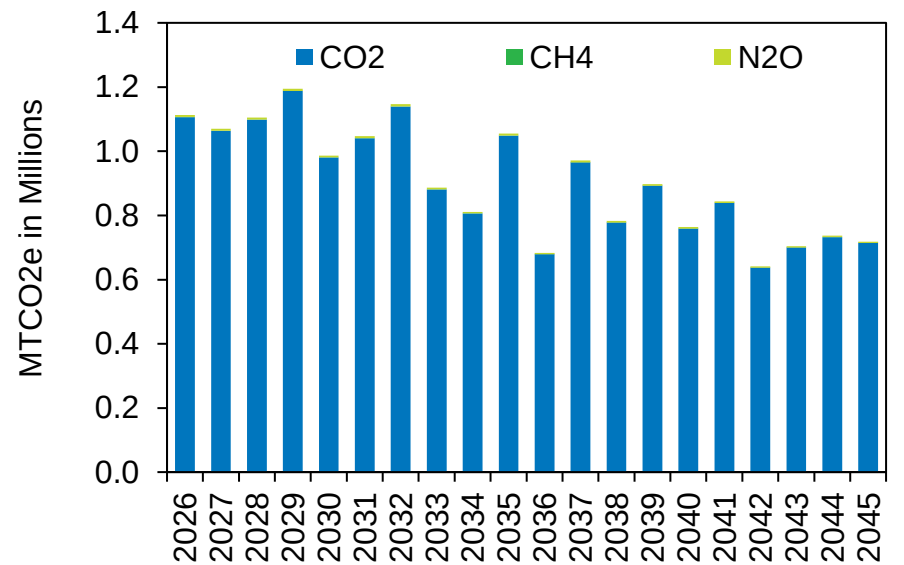
Scenario Description	Changes from PRS
High Costs of CCA Allowances	• 95th Percentile of Expected CCA Costs

High CCA Costs



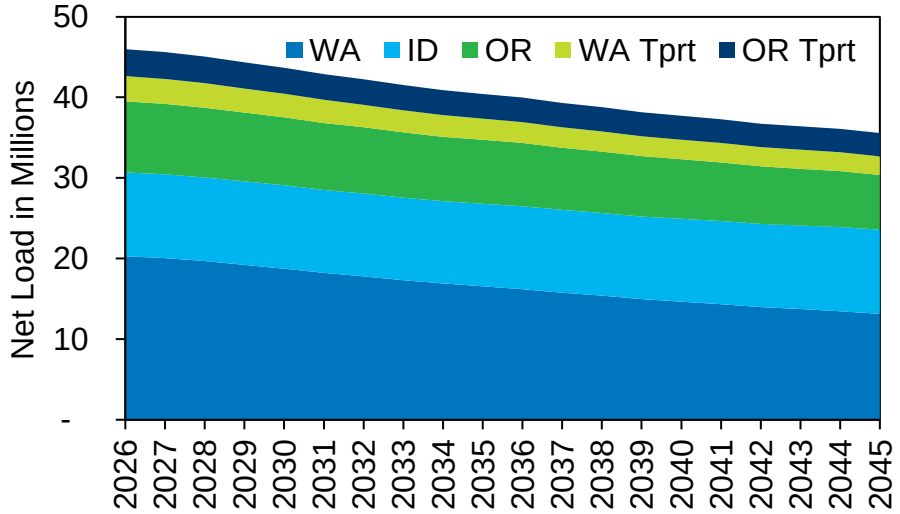


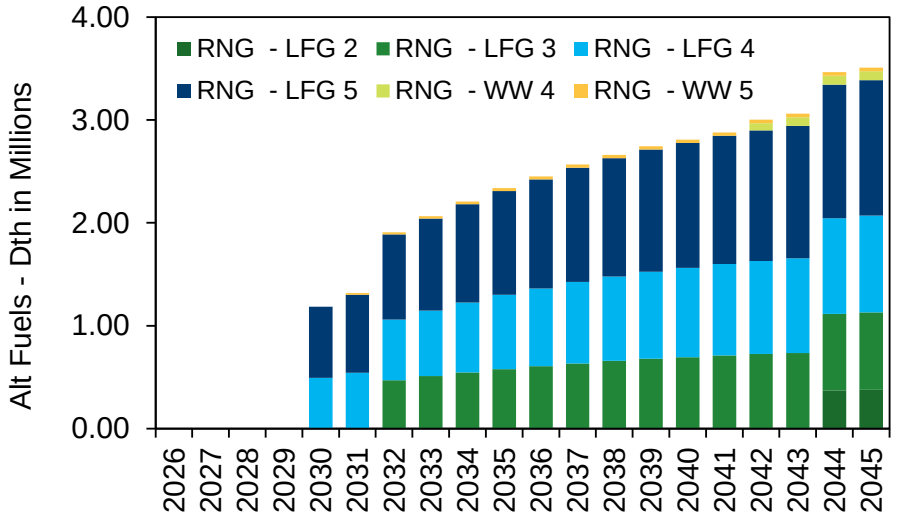


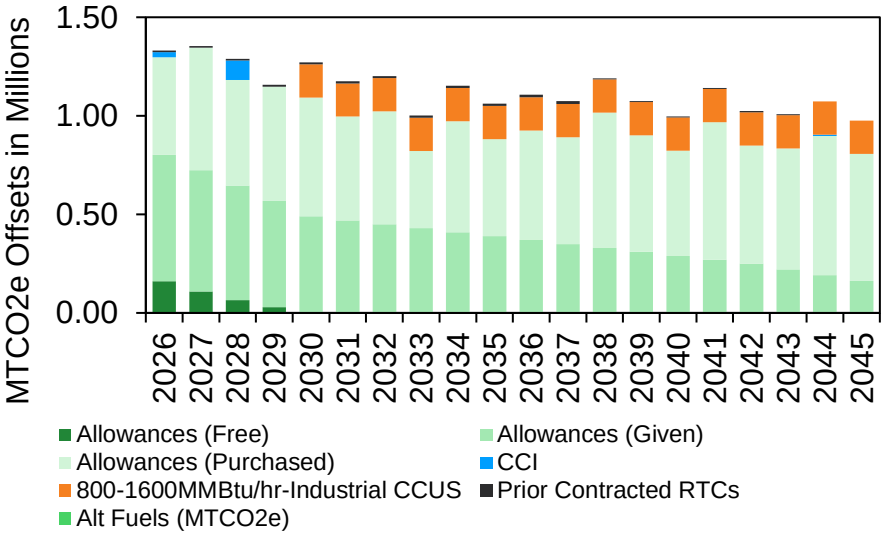


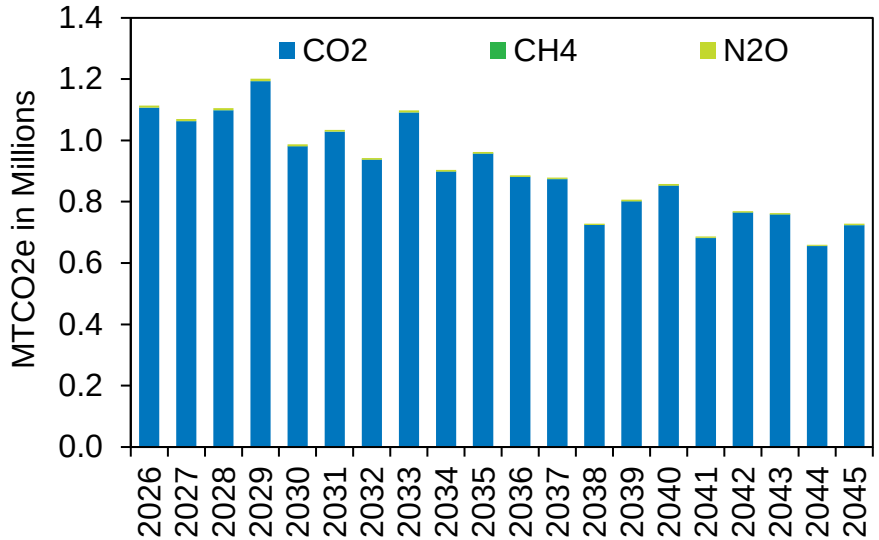
Scenario Description	Changes from PRS
High Costs of Natural Gas	• 95th Percentile of Stochastic Prices

High Natural Gas Prices



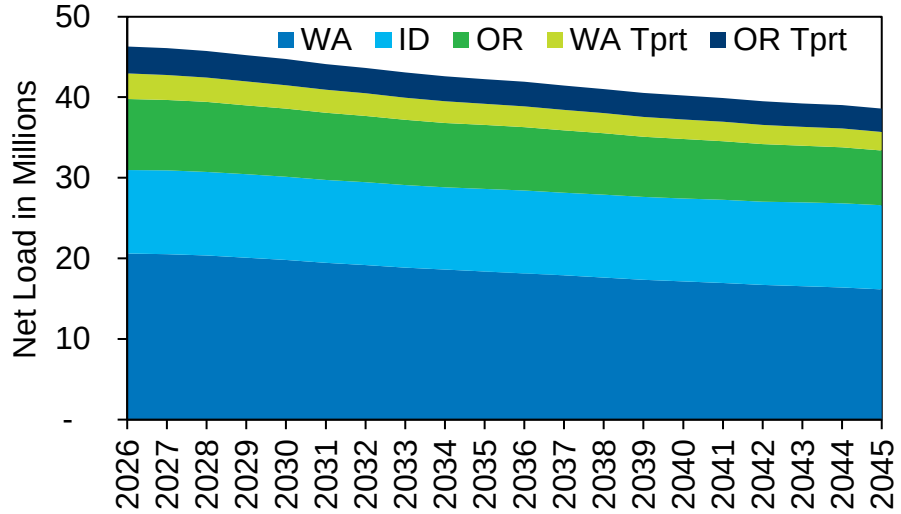


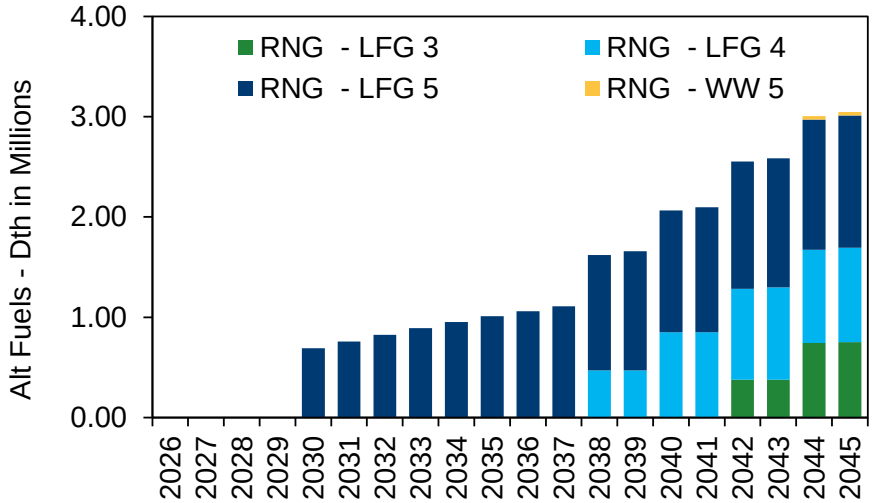


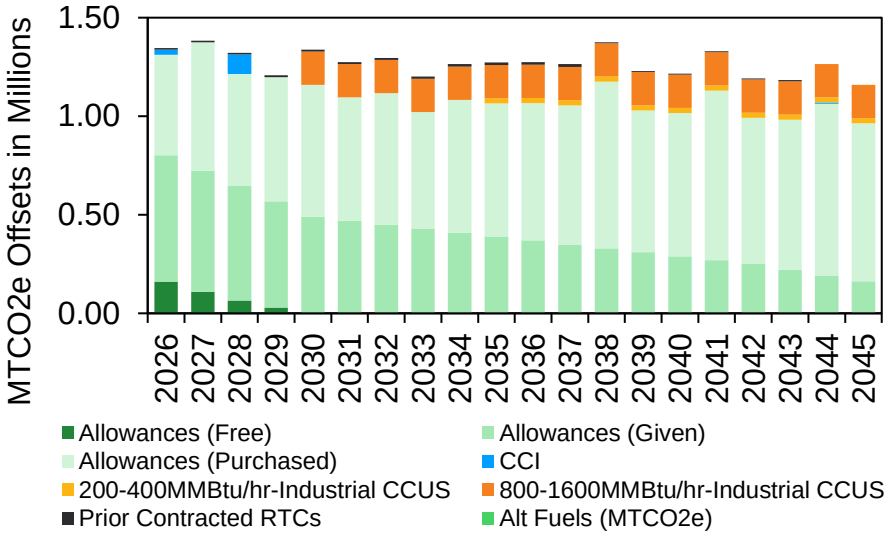


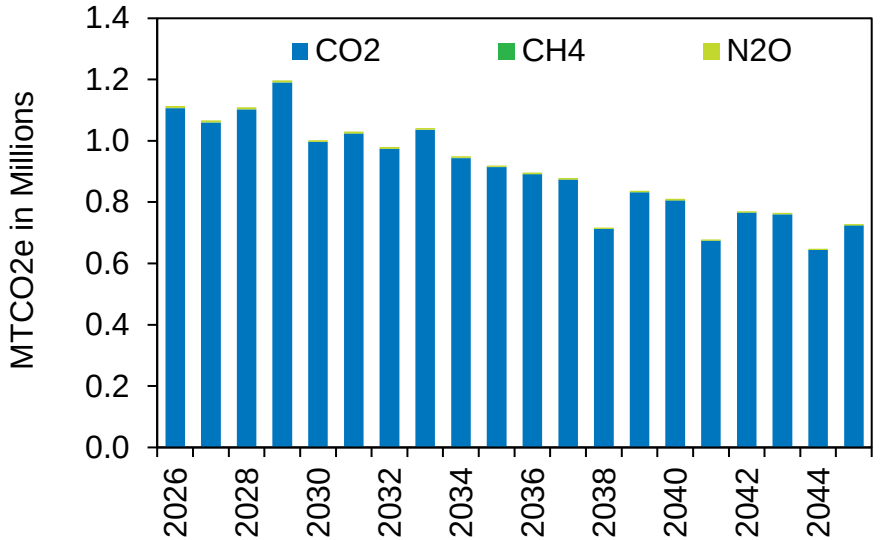
Scenario Description	Changes from PRS
Higher Loads for WA-Com	• Adjusts Loads to Estimate Changes to WA State Building Codes

Initiative 2066



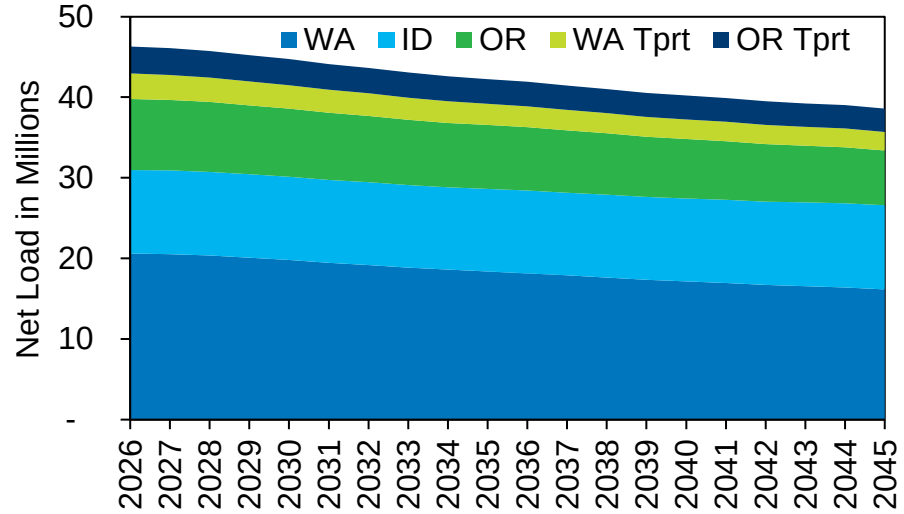


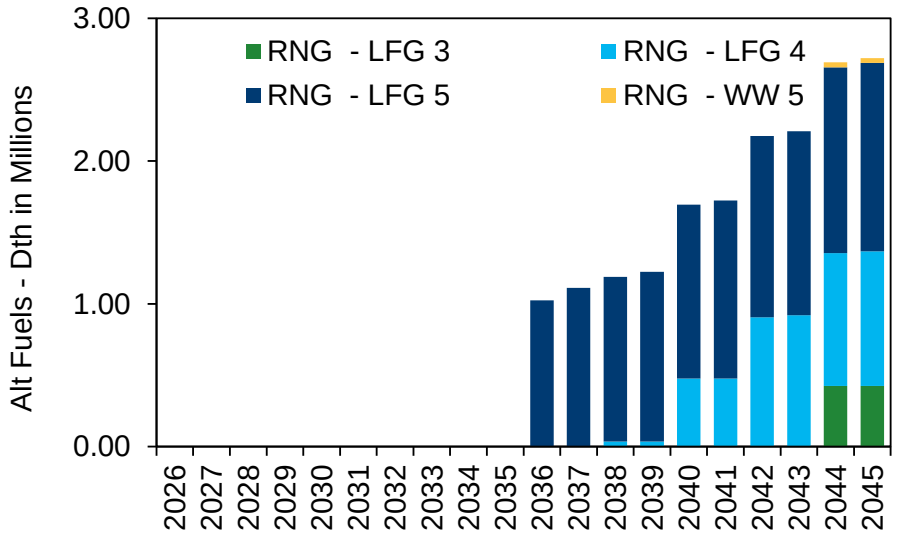


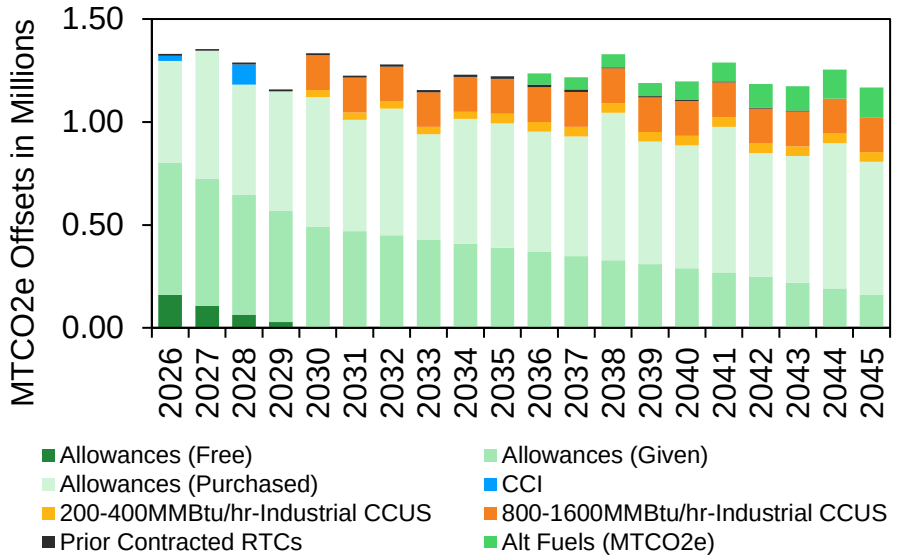


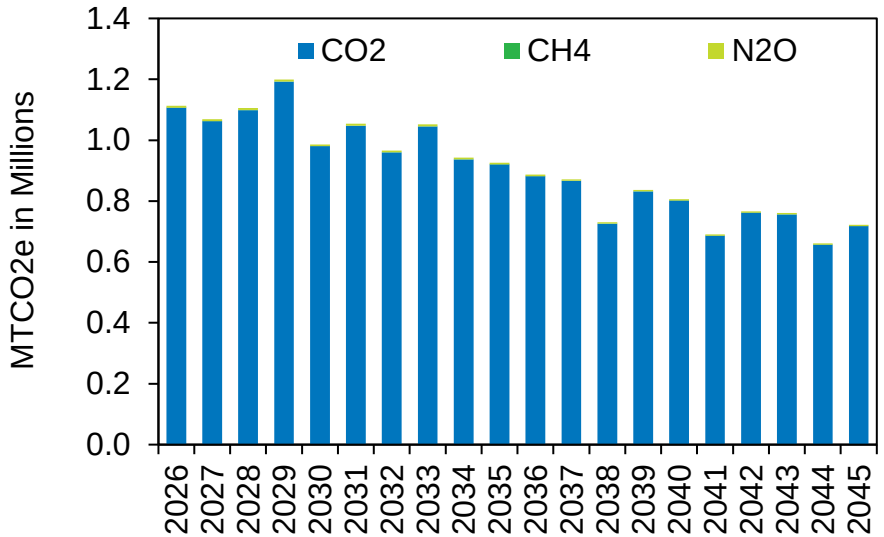
Scenario Description	Changes from PRS
Lower Costs of Alt Fuels	• 5th Percentile Costs for RNG, SM, H2

Low Alternative Fuel Costs



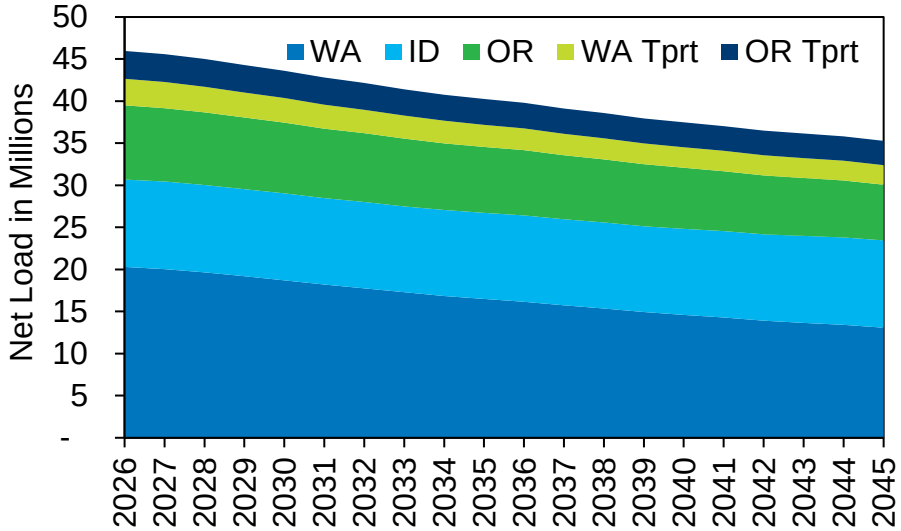


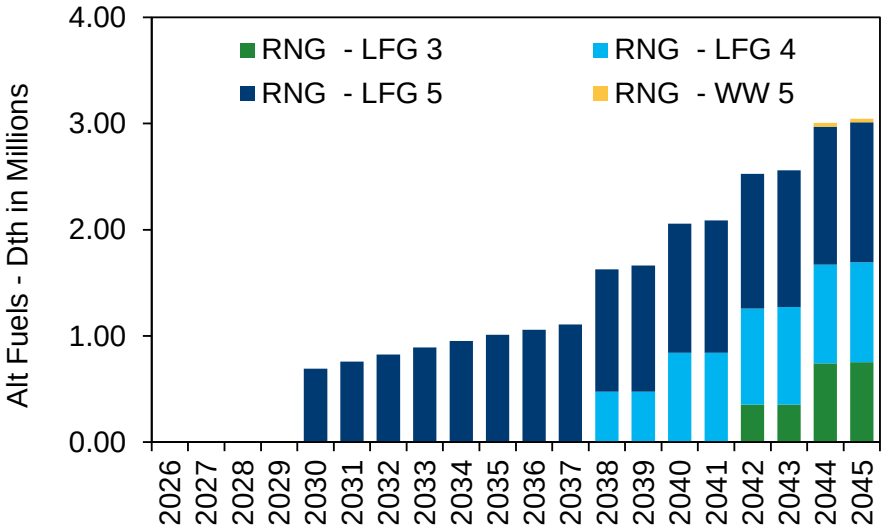


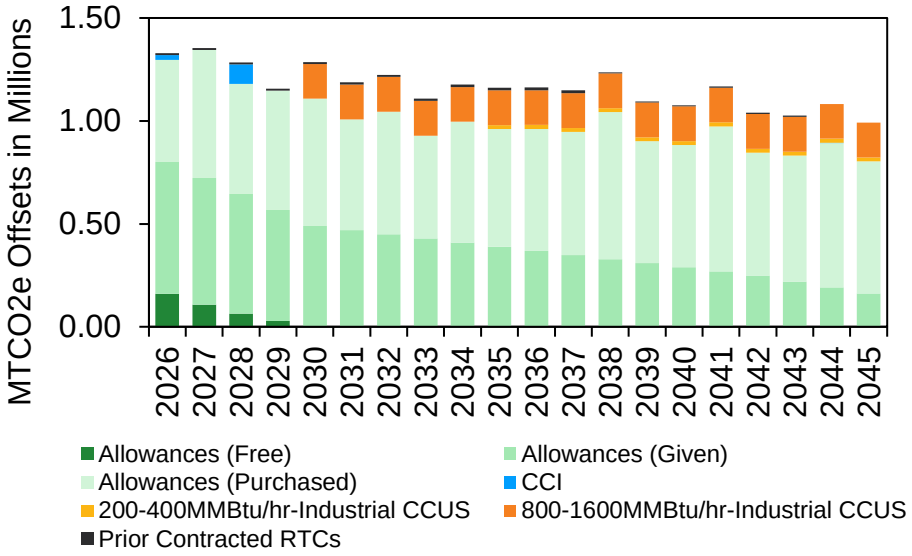


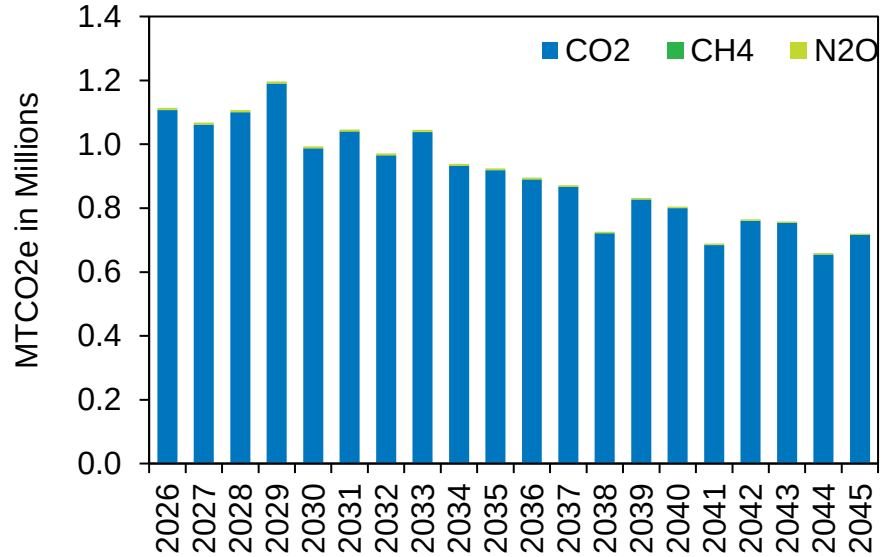
Scenario Description	Changes from PRS
Expected Futures Using 6.5 Weather Futures	• 6.5 Weather Futures

RCP 6.5



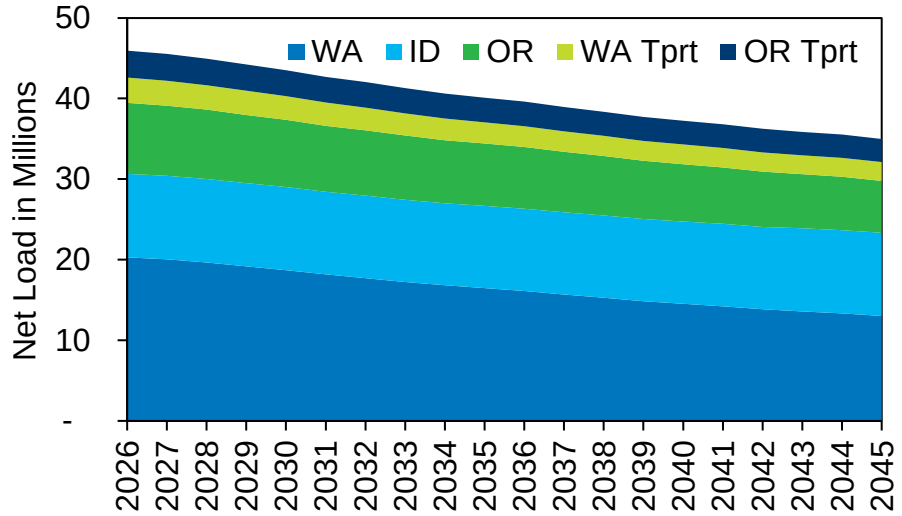


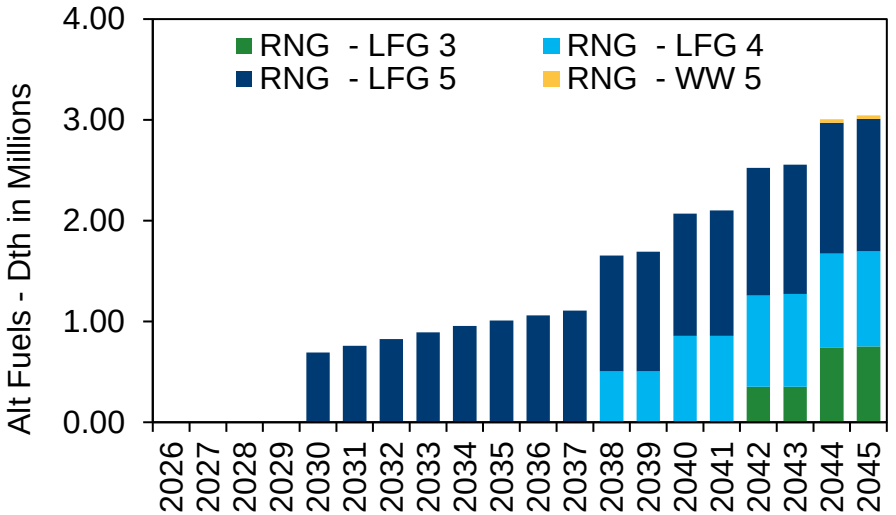


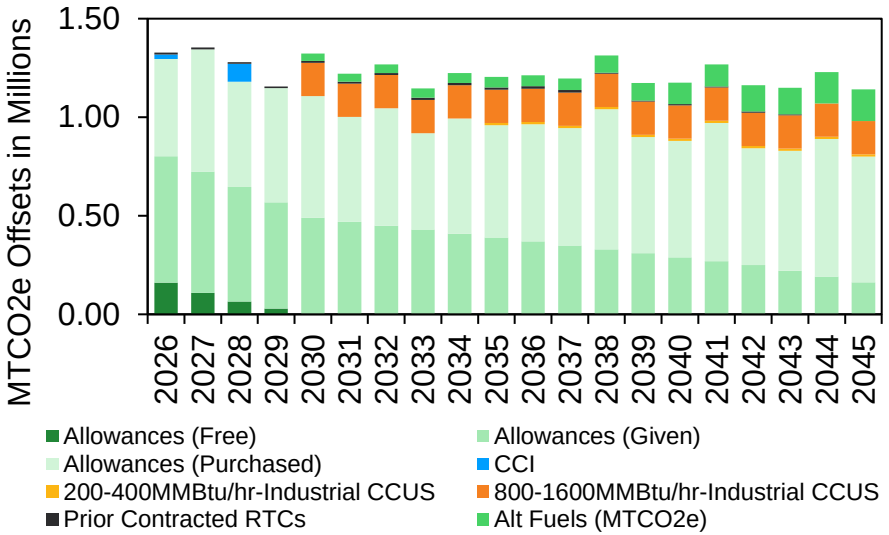


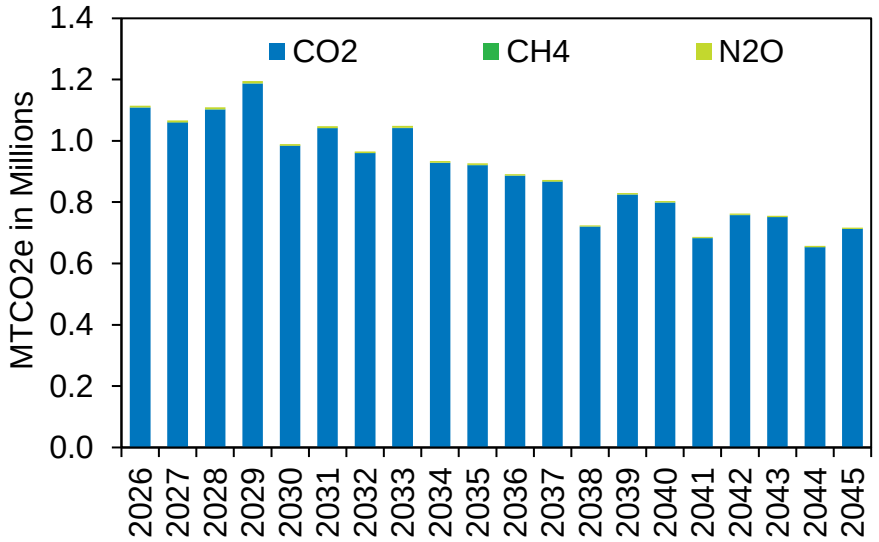
Scenario Description	Changes from PRS
Expected Futures Using 8.5 Weather Futures	• **8.5 Weather Futures**

RCP 8.5



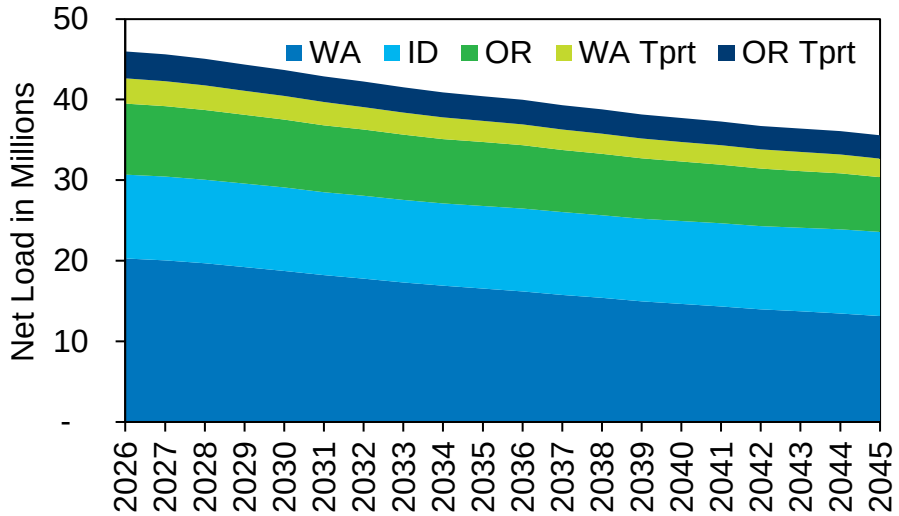


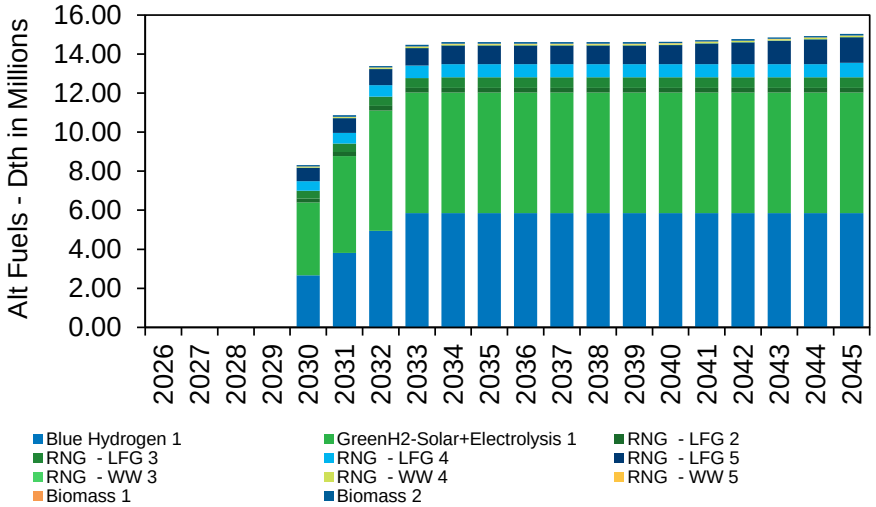


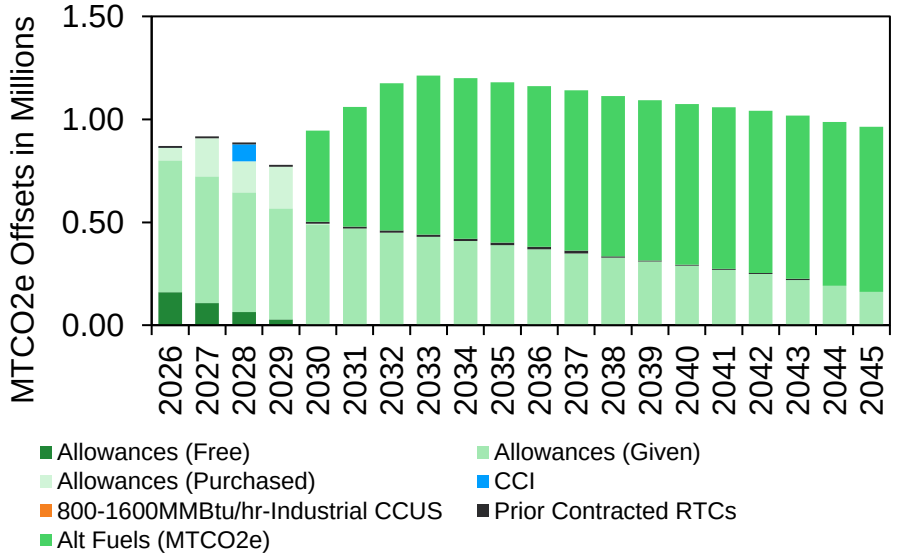


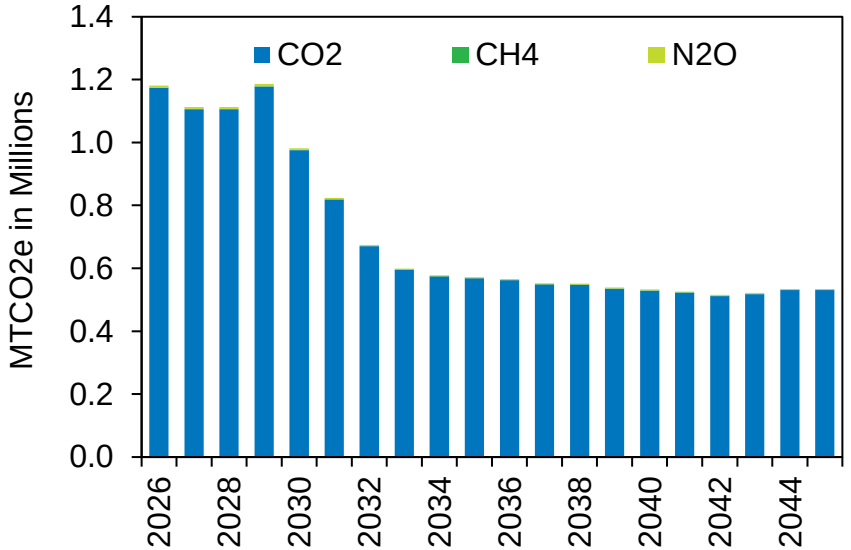
Scenario Description	Changes from PRS
Expected Futures Using 6.5 Weather Futures	• **Western Natural Gas Resources unavailable in Winter (Sumas,St2,JP)**

Resiliency

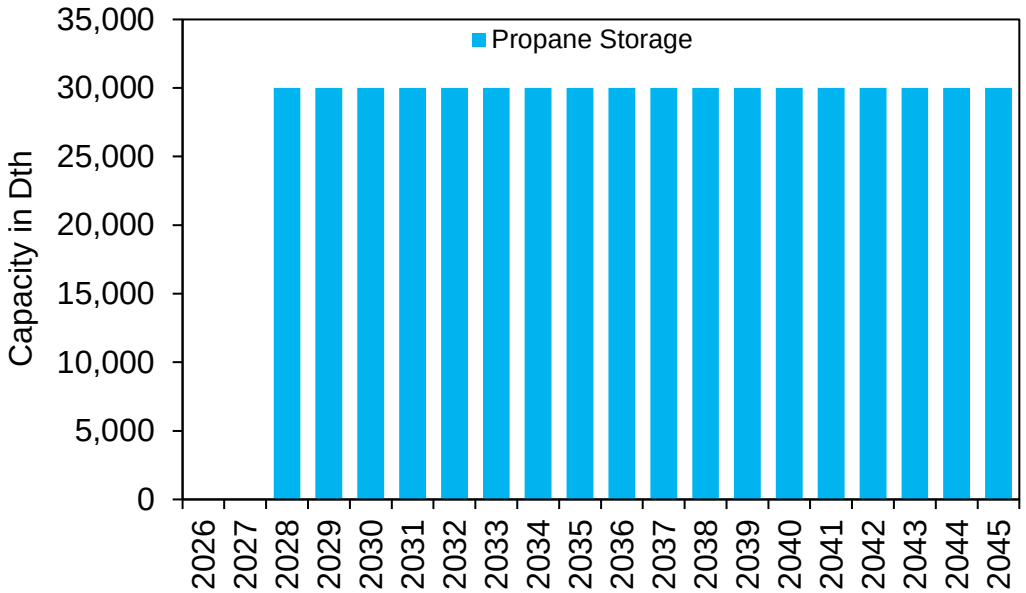


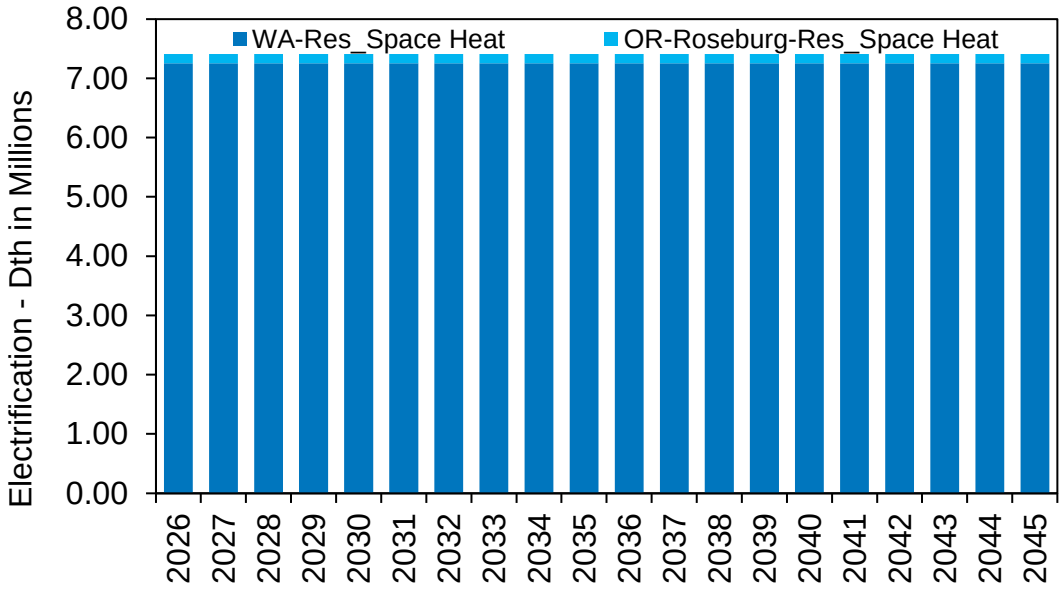






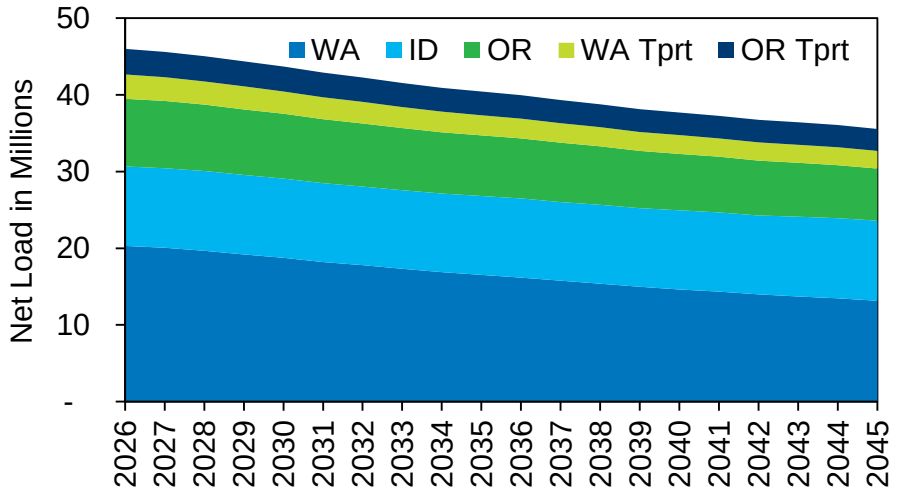
Resiliency Cont.

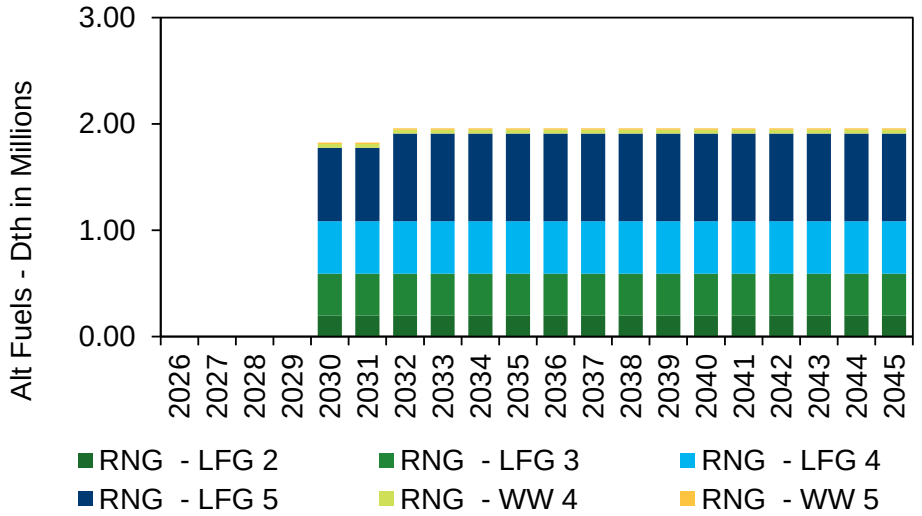


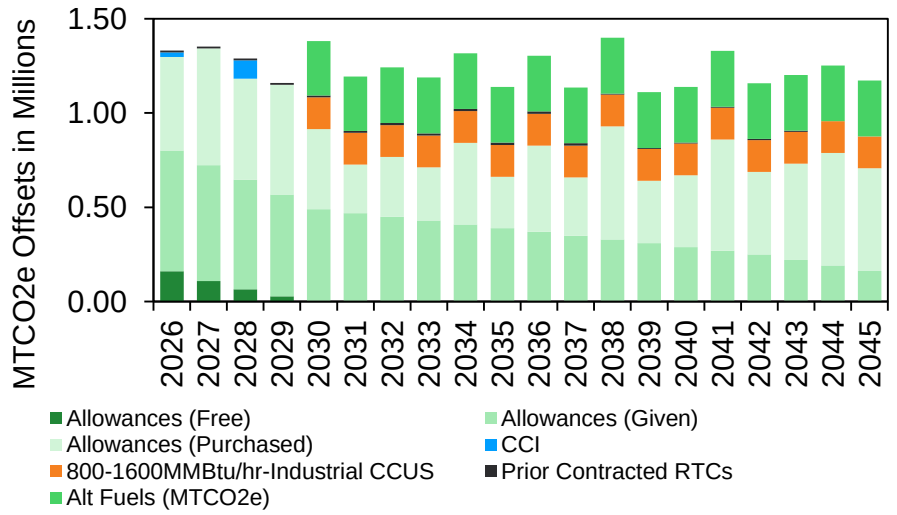


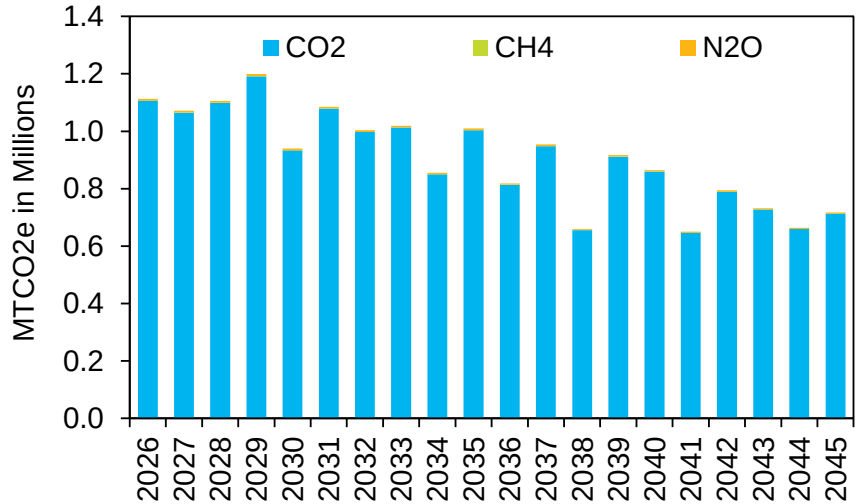
Scenario Description	Changes from PRS
Considers a Forced Fuel Mix	• RNG, SM, H2 Hard Selection

Diversified Portfolio



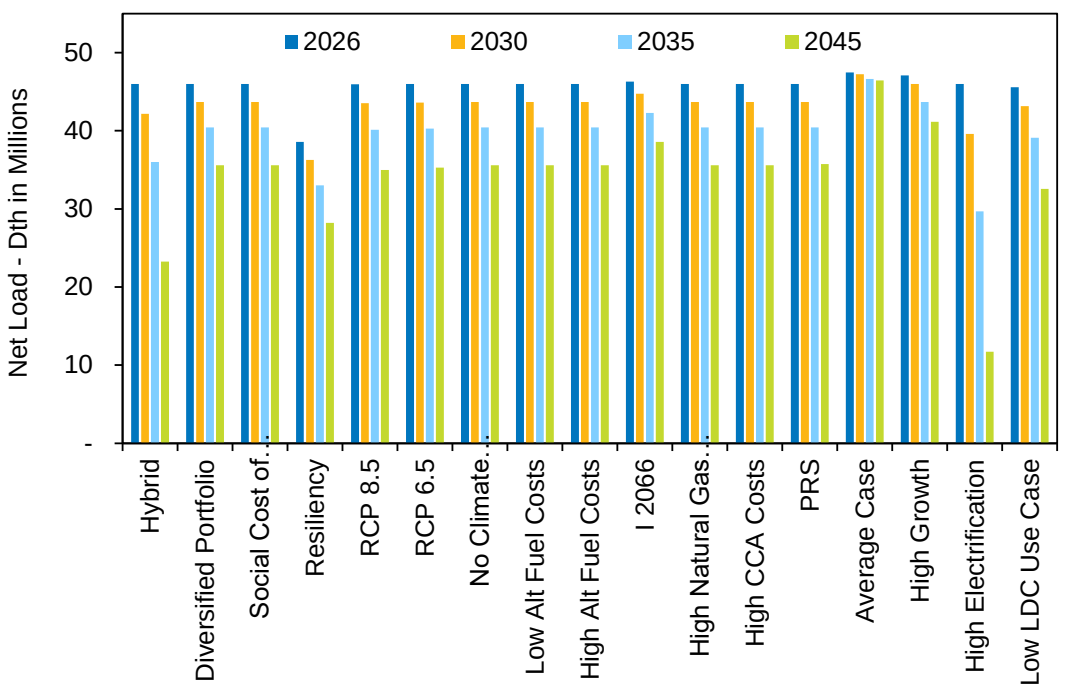


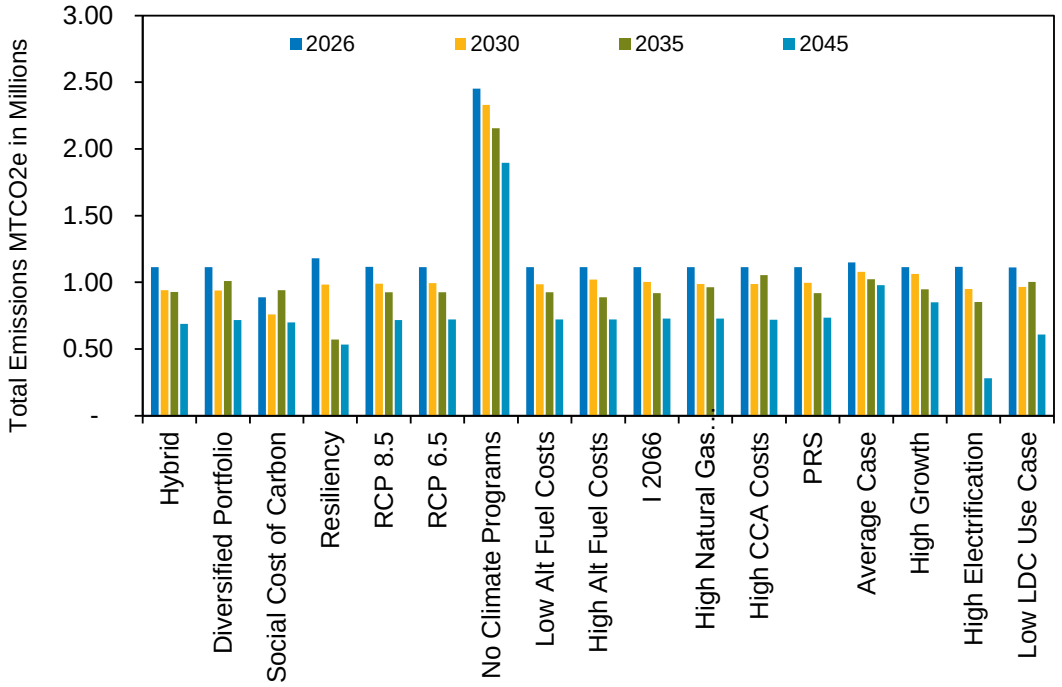




All Case Comparisons

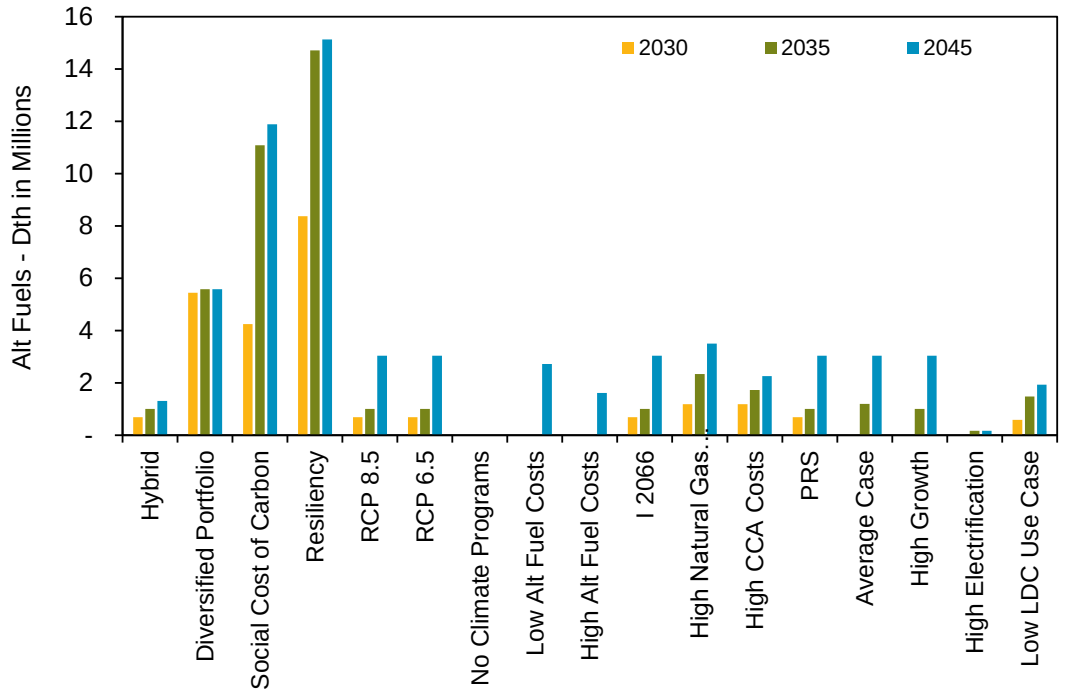
Net Load and Emissions

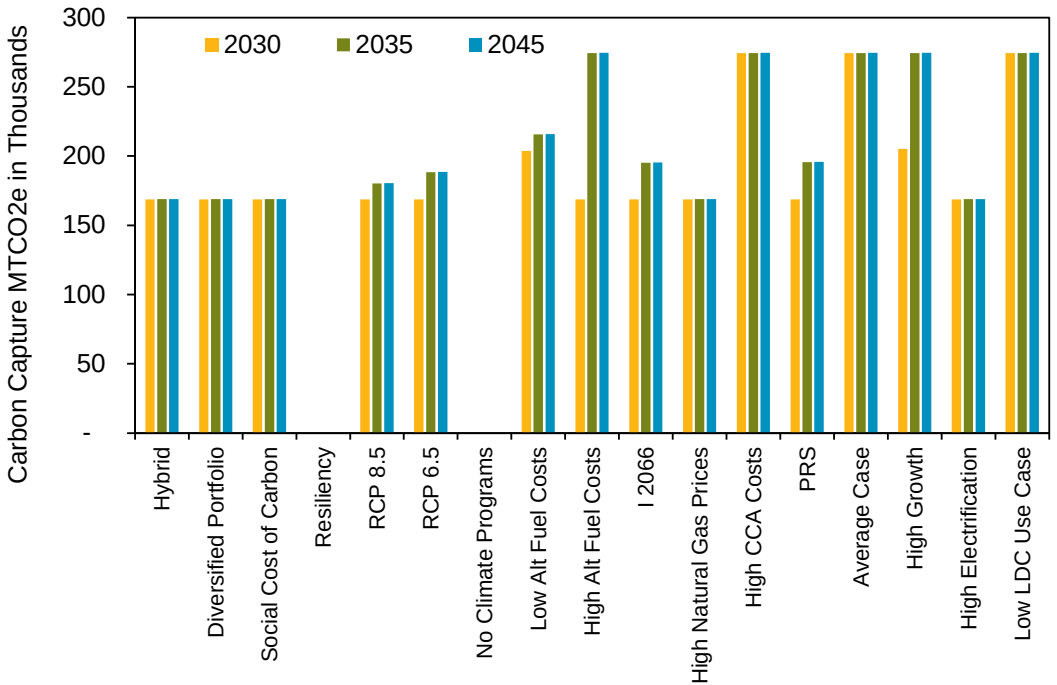




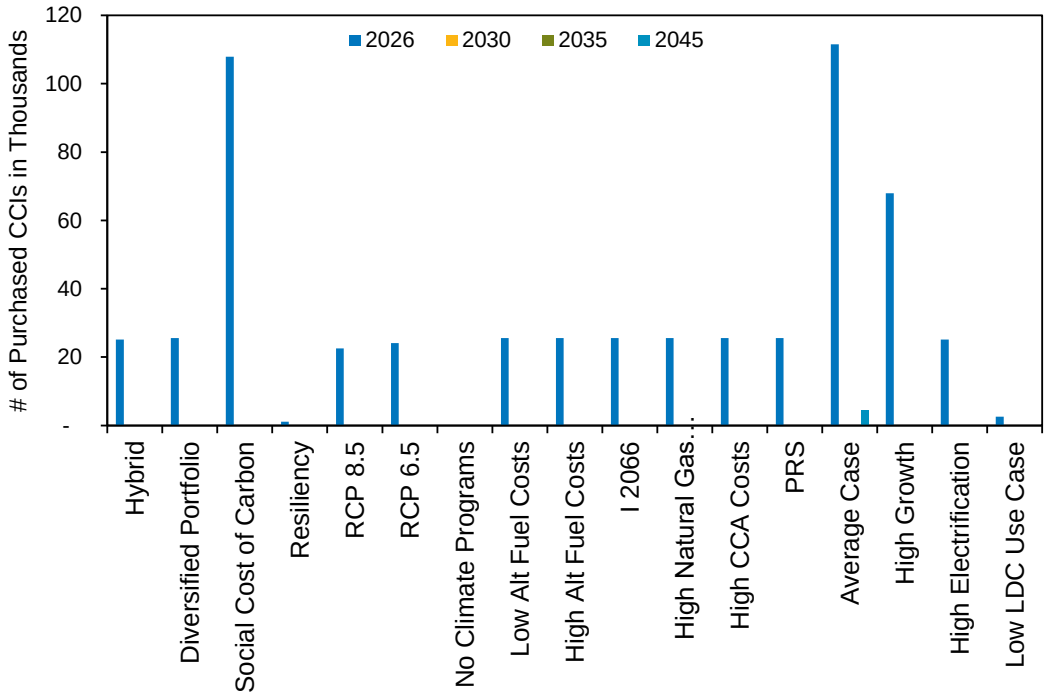
*Includes CO2, CH4, NO2

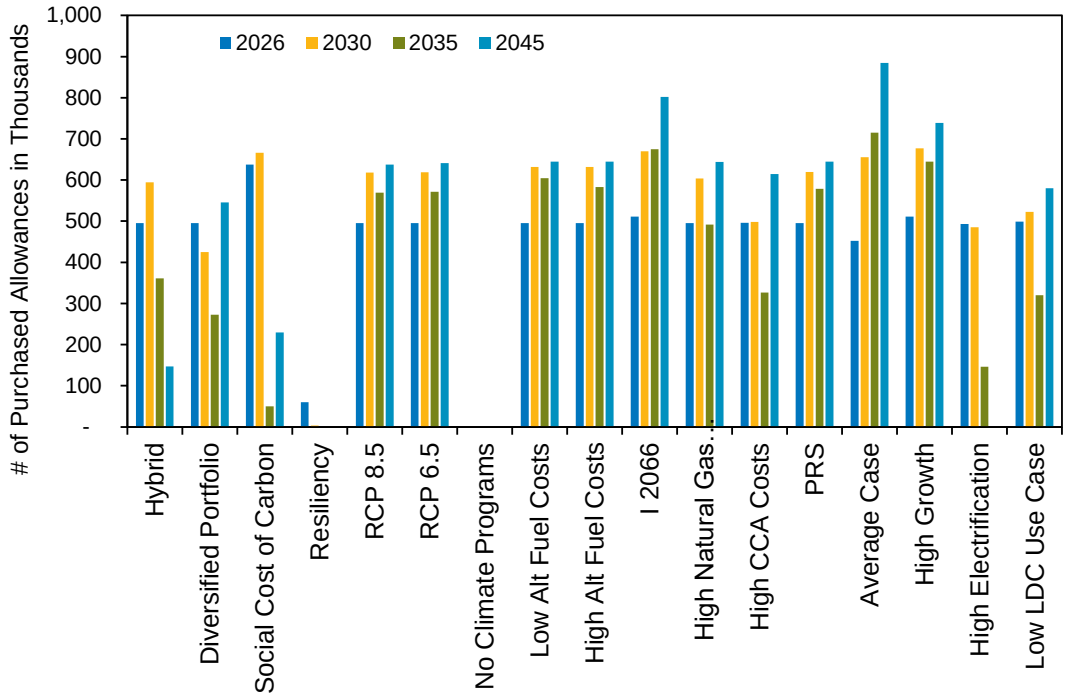
Alternative Fuels and Carbon Capture



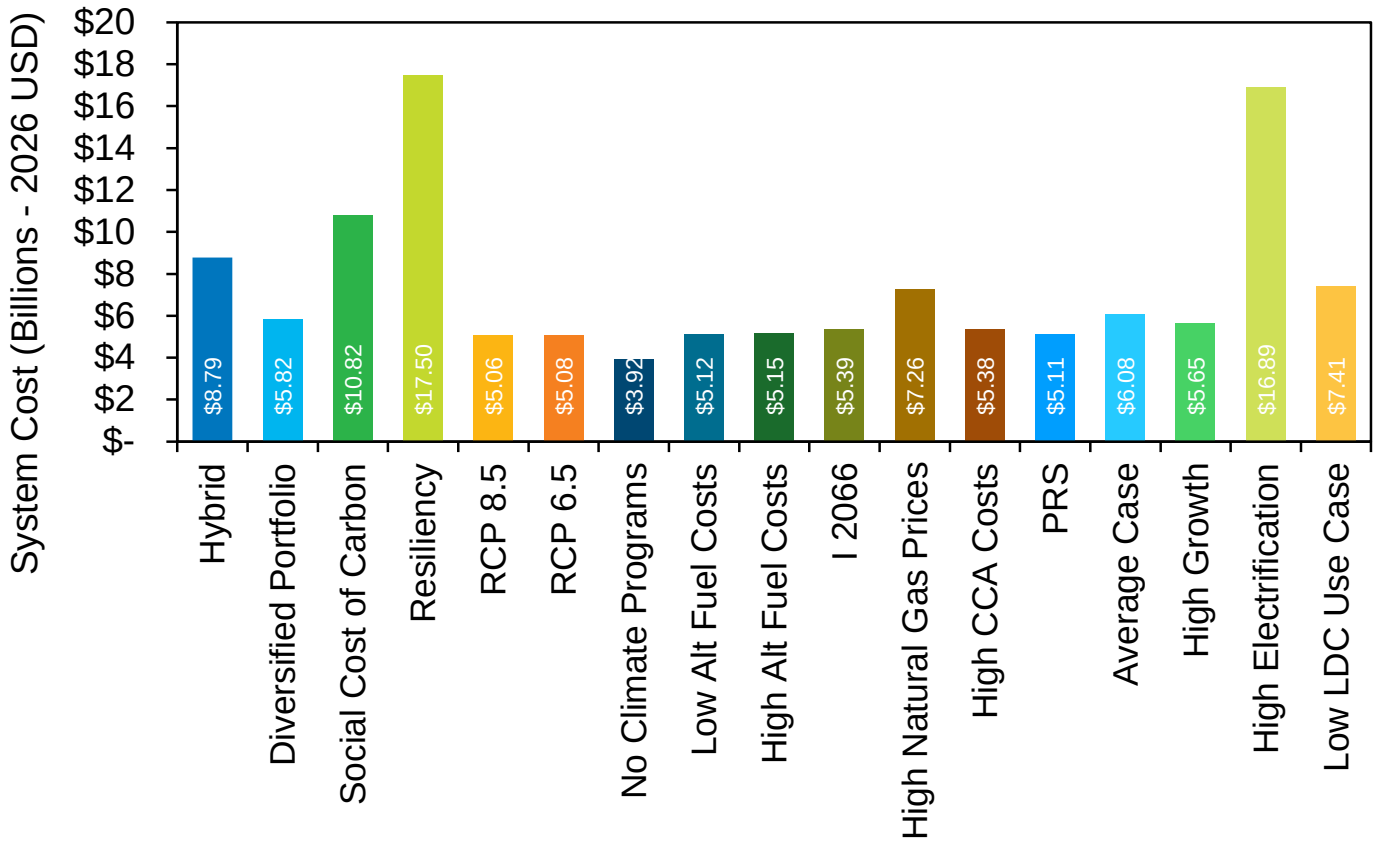


Climate Program Offset Purchases (CCIs and Allowances)





System Cost


System Cost (Billions - 2026 USD)
$20
$18
$16
$14
$12
$10
$8
$6
$4
$2
$-
$8.79
$5.82
$10.82
$17.50
$5.06
$5.08
$3.92
$5.12
$5.15
$5.39
$7.26
$5.38
$5.11
$6.08
$5.65
$16.89
$7.41
Hybrid
Diversified Portfolio
Social Cost of Carbon
Resiliency
RCP 8.5
RCP 6.5
No Climate Programs
Low Alt Fuel Costs
High Alt Fuel Costs
I 2066
High Natural Gas Prices
High CCA Costs
PRS
Average Case
High Growth
High Electrification
Low LDC Use Case

Next Steps

- Confirm PRS Selection
  - Determine if Carbon Capture is realistically available in 2030 with TAC
  - Or if scenarios should not be allowed Carbon Capture until 2040 timeframe
- Run all models again based on input of deterministic results and final EE savings and costs
- Run Alternative Scenarios through 500 Monte Carlo Futures
- Send out Draft to TAC with all available chapters and the PRS by January 31, 2025
- Send out remaining chapters to TAC once all results from Alternative Scenarios are finished
- Avista will accept feedback to it's Draft Gas IRP through March 9th to incorporate into final version of the 2025 Gas IRP document