



2023 Integrated Resource Plan Public-Input Meeting December 1, 2022



Agenda



- This is a **RECORDED MEETING**
- Approximate times shown in Pacific time zone

9:00-9:30 a.m. – Introductions and Updates

9:30-11:00 a.m. – Conservation Potential Assessment

11:00-11:30 p.m. – State Allocation & MSP Status Update

11:30-12:15 p.m. – Lunch Break (45 min)

12:15-12:45 p.m. – Transmission Interconnection: Cluster Study 2 Results

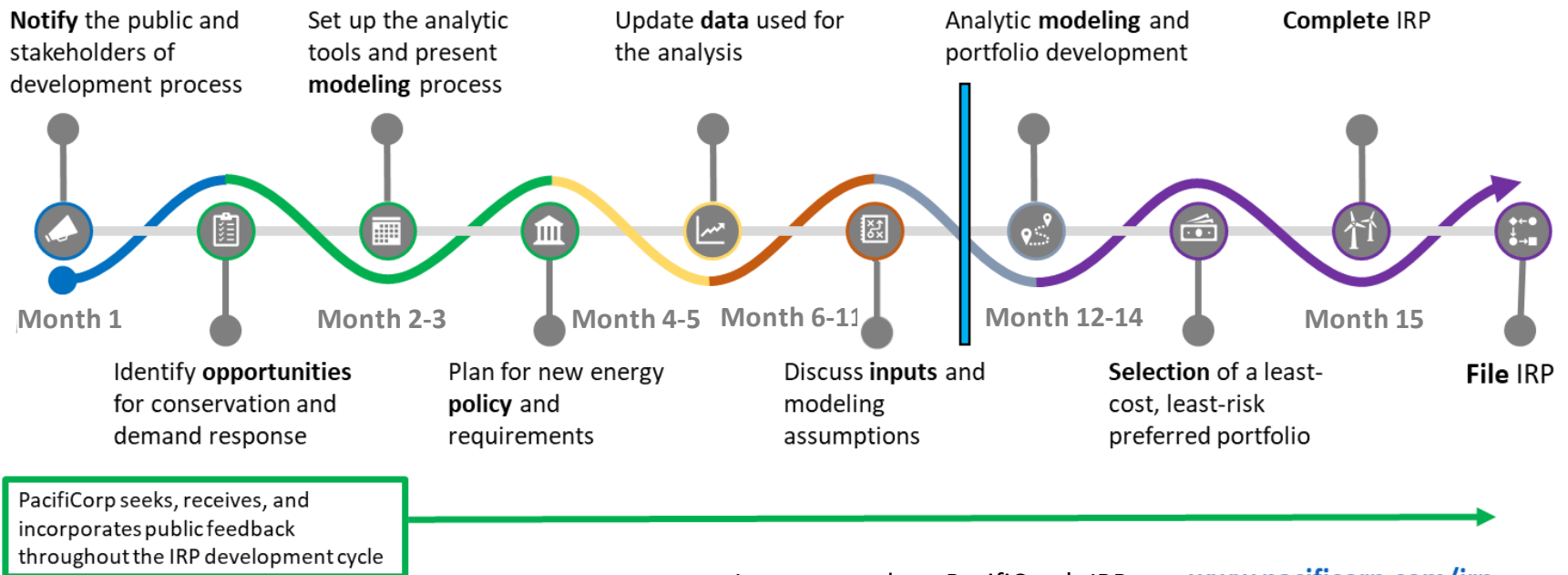
12:45-1:15 p.m. – Initial Risk and Reliability Study Plan

1:15-2:15 p.m. – State Policy Update

2:15-2:30 p.m. – Stakeholder Feedback Form Update

2:30-2:45 p.m. – Wrap-Up / Next Steps

Overview of PacifiCorp's IRP Development Process



Learn more about PacifiCorp's IRPs at: www.pacifiCorp.com/irp

Status Update Cont.



2023 IRP Upcoming Public Input Meeting Date(s)

February 25, 2022 - Public Input Meeting 1

April 7, 2022 - Public Input Meeting 2

May 12, 2022 - Public Input Meeting 3

June 10, 2022 - Public Input Meeting 4

July 14, 2022 - Public Input Meeting 5

September 1-2, 2022 - Public Input Meeting 6

October 13-14, 2022 - Public Input Meeting 7

December 1, 2022 - Public Input Meeting 8

January 13-14, 2023 - Public Input Meeting 9

February 23-24, 2023 - Public Input Meeting 10



Conservation Potential Assessment



Schedule and Milestones



Throughout the 2023 CPA development process, we will continue to request feedback from interested parties.

Timeframe	Milestone	Public Input Request
February 22, 2022	Share Work Plan	Provide input on scope (2 emails)
February 25, 2022	Present on Scope of Work	Additional input on scope (0 forms)
April 1 and April 7, 2022	Share Draft Lists, Present on Resource List	Provide feedback by April 11. (2 emails)
April 18, 2022	Finalize Resource Lists	n/a – feedback incorporated
May 12, 2022	Share Key Drivers of Potential, Assumptions	Participate in meeting, provide input
September 1/2, 2022	Present Draft Results – Res and Com	Review materials and provide feedback
December 1/2, 2022	Present Final Results	Provide final feedback
January 2023	Draft CPA for Review	Provide input on draft report
February 2023	Publish Final Report	n/a – feedback incorporated

2023 CPA Analysis Themes



CPA Forecasting is Dynamic

- CPA forecasting is dynamic and markets change quickly
- Analysis every two years to capture these changes

Lighting Changes

- Finalization of federal 45 lm/W backstop in 2022 for general service lighting
- Adjusted federal lamp type definitions

Segmentation

- Income thresholds for residential sector in all states

State Specificity

- Regional measure and market data sourcing
- State specific codes, standards and lighting assumptions

Load Forecast

- Baseline forecast includes climate change, building and vehicle electrification

New Federal Policy

- 2023 CPA takes acceleration of key measures due to the 2022 Inflation Reduction Act (IRA) into account

Key Updates Relative to the 2021 CPA



Change Area	Detail
State-Specific Adjustments	Improved state-specific measure and market data sourcing
	Updated residential surveys
	Updated load forecast data
	Codes & Standards updates
	Expanded integration of non-energy impacts in Washington
Forecasting Methodology	Residential Low- and Moderate-Income segmentation added
	Lighting savings methods (market baseline and federal standards)
	Inclusion of climate change in main forecast
	Building electrification assumed in baseline forecast in all states
	Adjusted key ramp rates to account for new federal efficiency legislation
Other	Other updated secondary sources (e.g., DOE Annual Energy Outlook)
	Renewed emerging technology screen
	Applicability and Saturation Sourcing Updates
	Incremental Home Energy Reports only in CA/OR and New Construction

Lighting



- **General Service Lighting (GSL):**

- 2023 CPA includes the codified 45 lm/W EISA (Energy Independence and Security Act of 2007) backstop and exempted bulb type re-definition, effective July 2022
- The 45 lm/W backstop does not currently have a widely available market analog
 - Only CFLs and LEDs currently meet standard, and CFLs have low market penetration (~5%)
- Draft Results:
 - UT and WY used frozen baseline = halogen standard jumped to new 45 lm/W backstop by 2024
- Final results incorporate:
 - Market baseline (95% LEDs) for Utah
 - Blended market and frozen baseline for Wyoming
 - Other jurisdictions either 95% or 100% LED, depending on state

Overall Lighting Potential Trends, compared to 2021 CPA:

New efficacy standard → large reduction
in general service lighting

Lower CBSA 2019 exterior lighting power
densities (LPDs) → reduction in exterior
C&I lighting

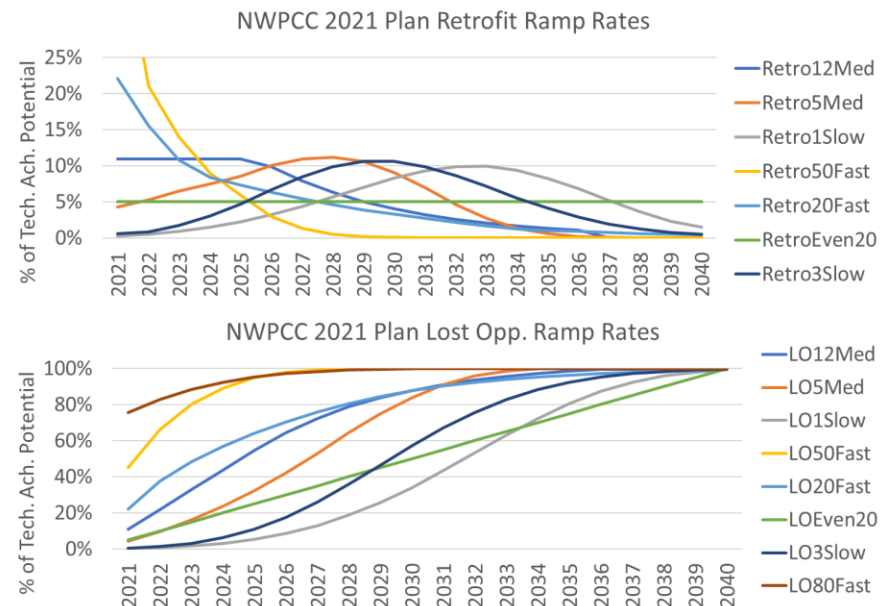
Bulb type redefinition → large reduction
in exempted lighting

Included CBSA 2019 data in weighting for
Rocky Mountain Power states → lower
LPDs → reduction in C&I lighting

Adjustments for Recent Federal Policy



- Inflation Reduction Act (IRA) + Infrastructure Investment & Jobs Act (IIJA) = >\$25 billion for rebate programs and tax incentives for energy efficiency nationally
- Actual magnitude of cost reductions is uncertain at this time, but these Acts are likely to accelerate measure adoption.
- To account for this, the 2023 CPA accelerates the assumed uptake of some HVAC, weatherization, and whole building measures by accelerating ramp rates from those used in the 2021 CPA.
- Examples:
 - Window Measures
 - Heat Pump Upgrades and Conversions
 - ENERGY STAR Home Design



Other Notable CPA Changes



- Climate Change inclusion
- Higher AC saturation
- EVs and Electrification

Load Forecast

- Measure Characterization Updates
- Segmentation Updates
- DOE Annual Energy Outlook 2022

Secondary Source Updates

Emerging Techs

- New Emerging Technologies
- More Efficient Options (e.g., NEEA Tier 5 HPWH)

Applicability & Saturation Updates

- Updated residential survey
- Final NWPCC 2021 Power Plan
- CBSA 2019

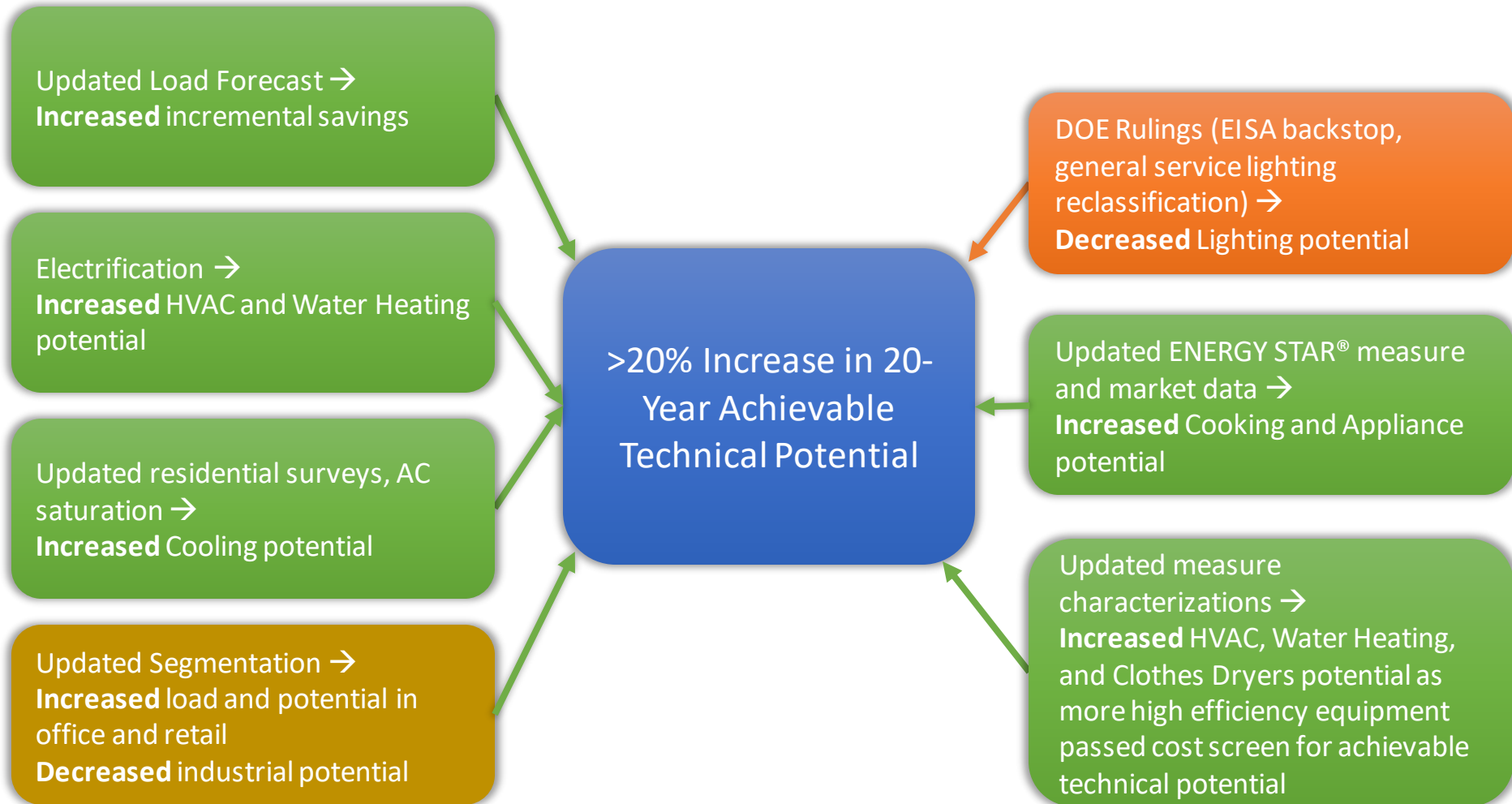


2023 CPA – Energy Efficiency Final Potential Results

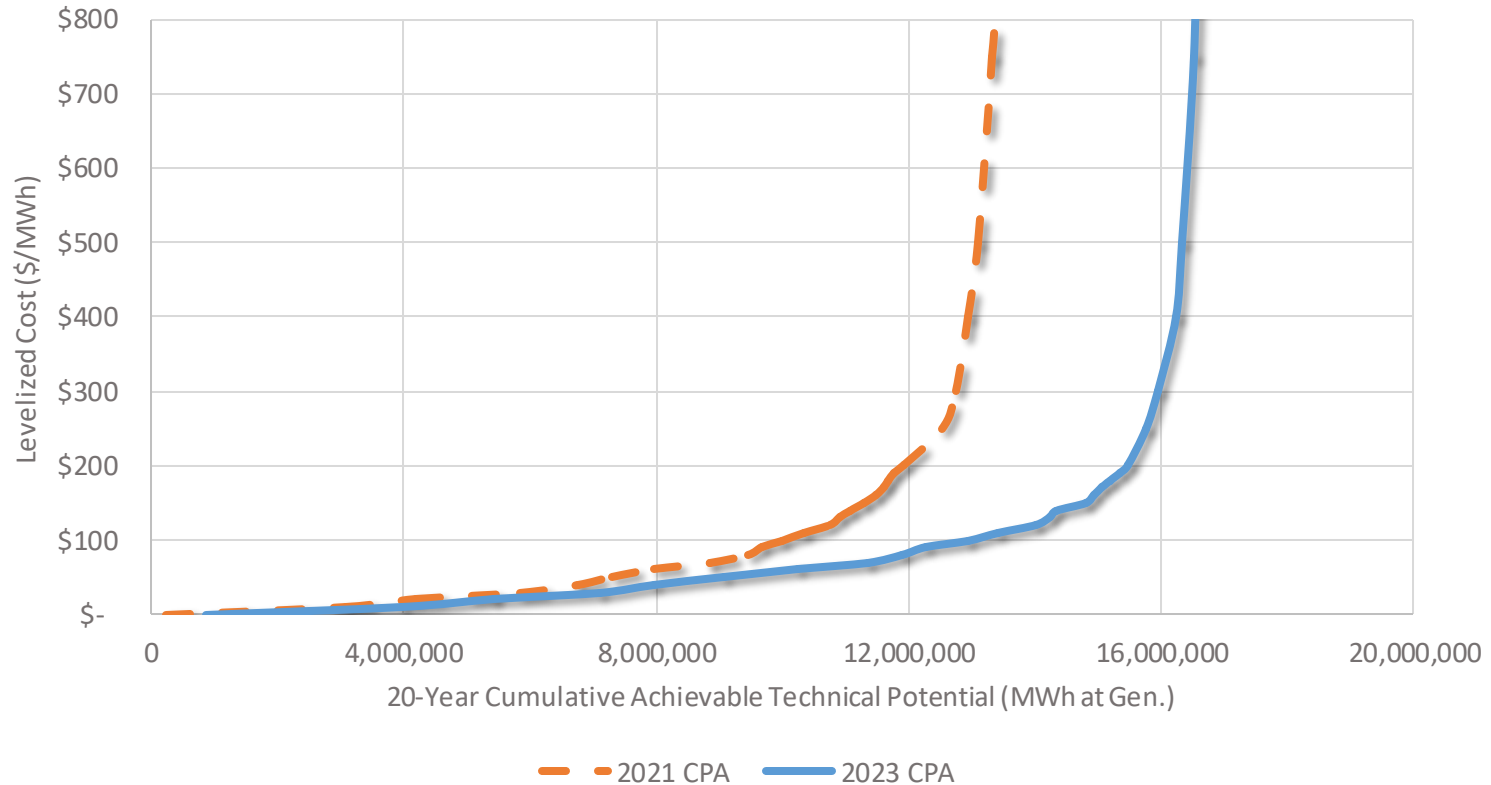




Key Drivers of Potential



Achievable Technical Potential Supply Curve (All States, Cumulative MWh)

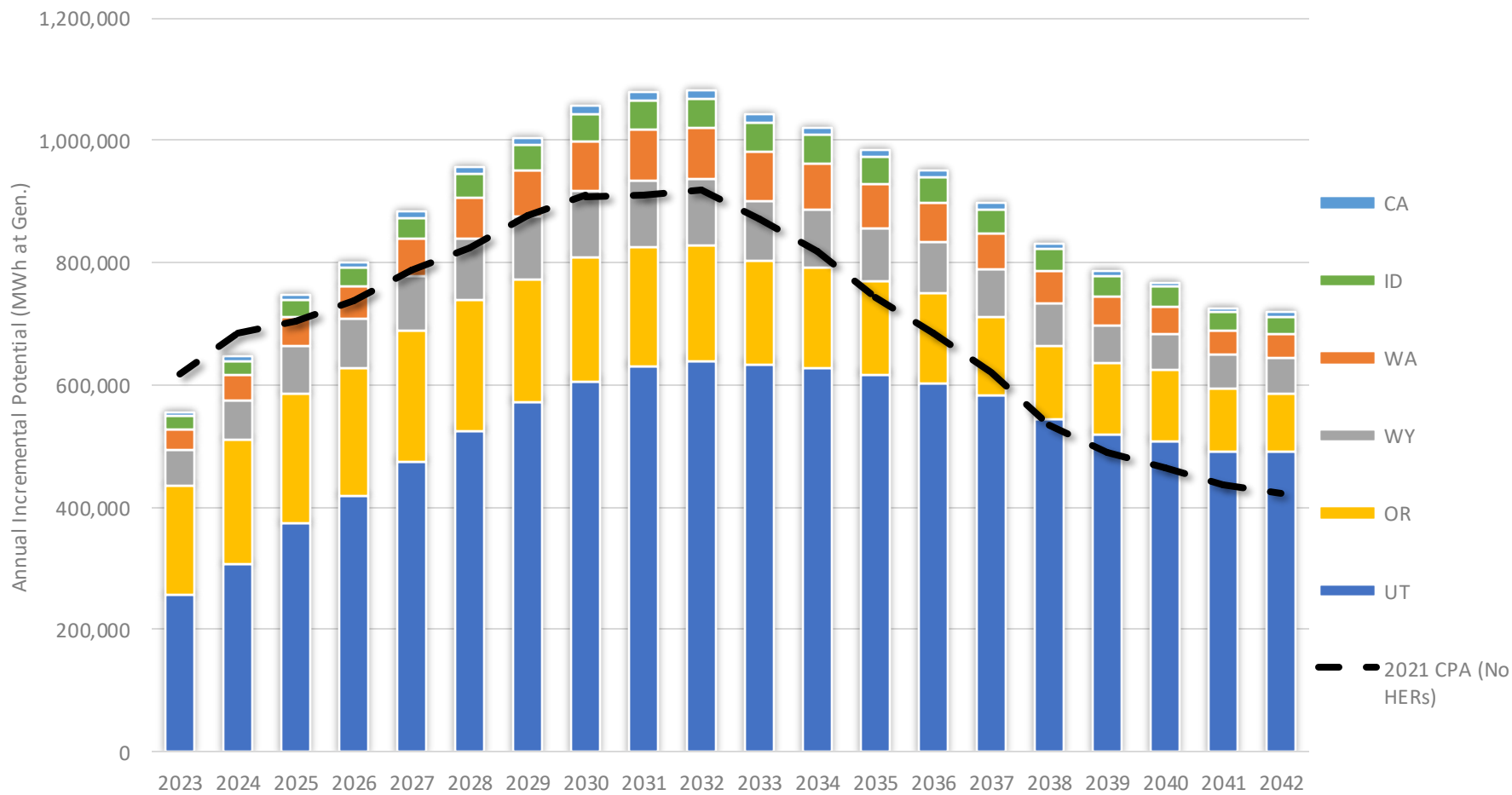


Total Cumulative 20-year Potential Comparison (GWh)		
2021 CPA	2023 CPA	% Difference
13,763	16,713	+21%

Achievable Technical Potential Comparison (All States – Incremental MWh – No Home Energy Reports)



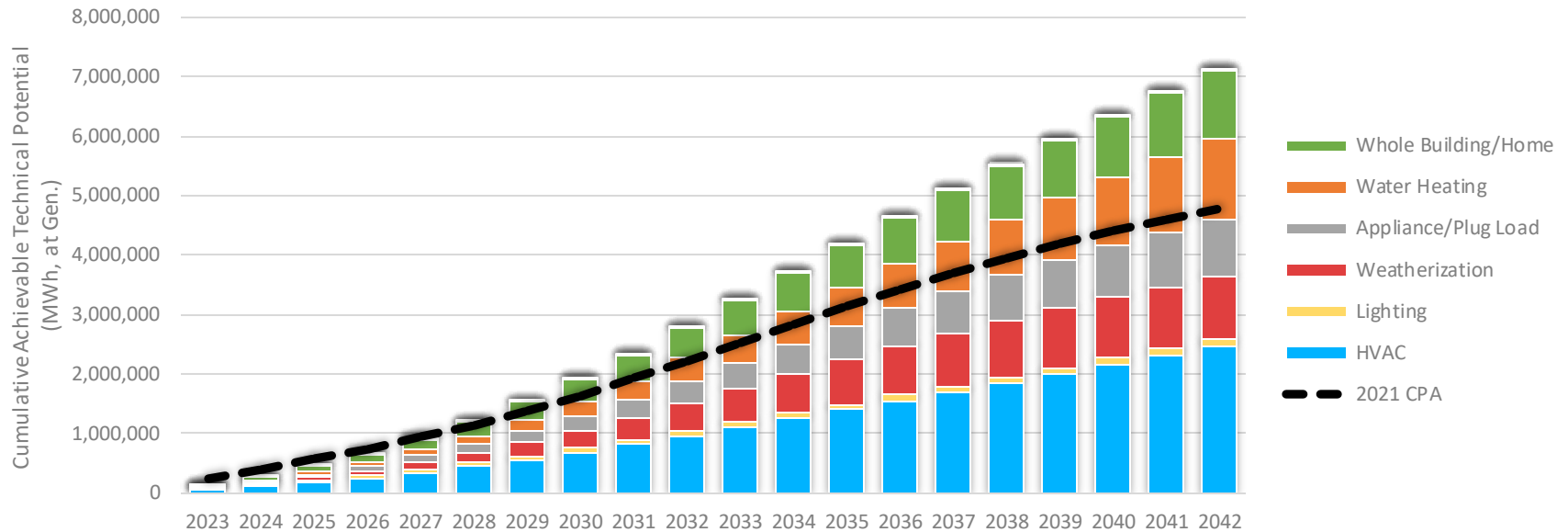
Achievable Technical Potential Comparison (All States - No HERs - All Sectors)



Residential Results



Cumulative Savings by Measure Category (MWh, at Gen.) - All States - Residential

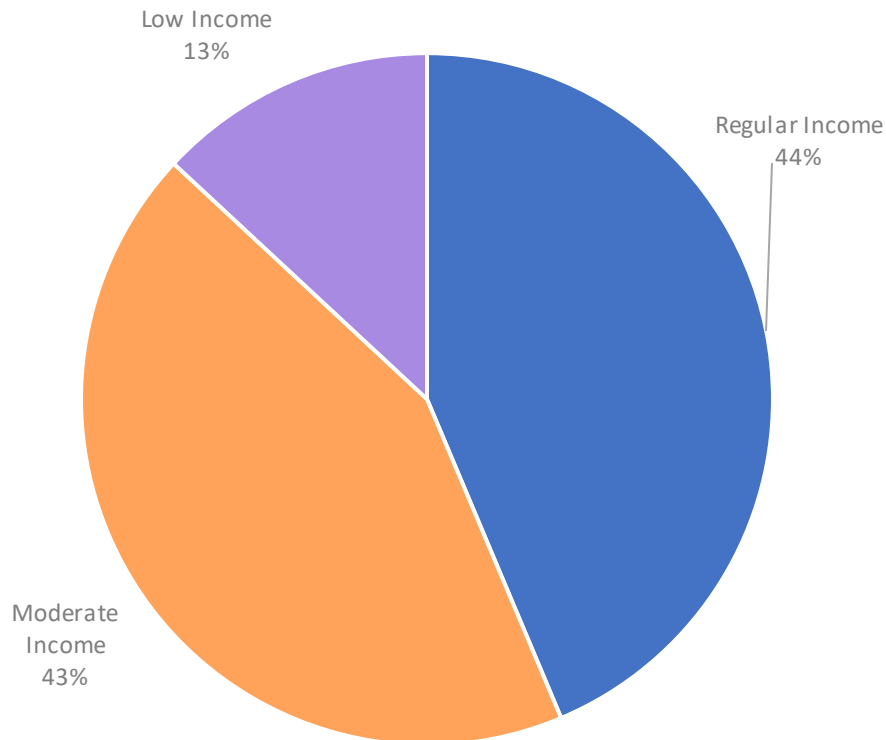


Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total	Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total
1	Water Heater (<= 55 Gal)	1,125,544	15.8%	6	Clothes Dryer	272,177	3.8%
2	Central AC	699,365	9.8%	7	Advanced Home Design - Zero Net Energy	262,046	3.7%
3	ENERGY STAR Home Design	354,215	5.0%	8	Evaporative Cooler - Whole Home	198,256	2.8%
4	Conversion to Ductless Heat Pump	331,061	4.7%	9	Conversion to Ground-Source Heat Pump	185,366	2.6%
5	Conversion to Air-Source Heat Pump	289,923	4.1%	10	TVs	165,311	2.3%
Total of Top 10 Measures						3,883,261	54.6%

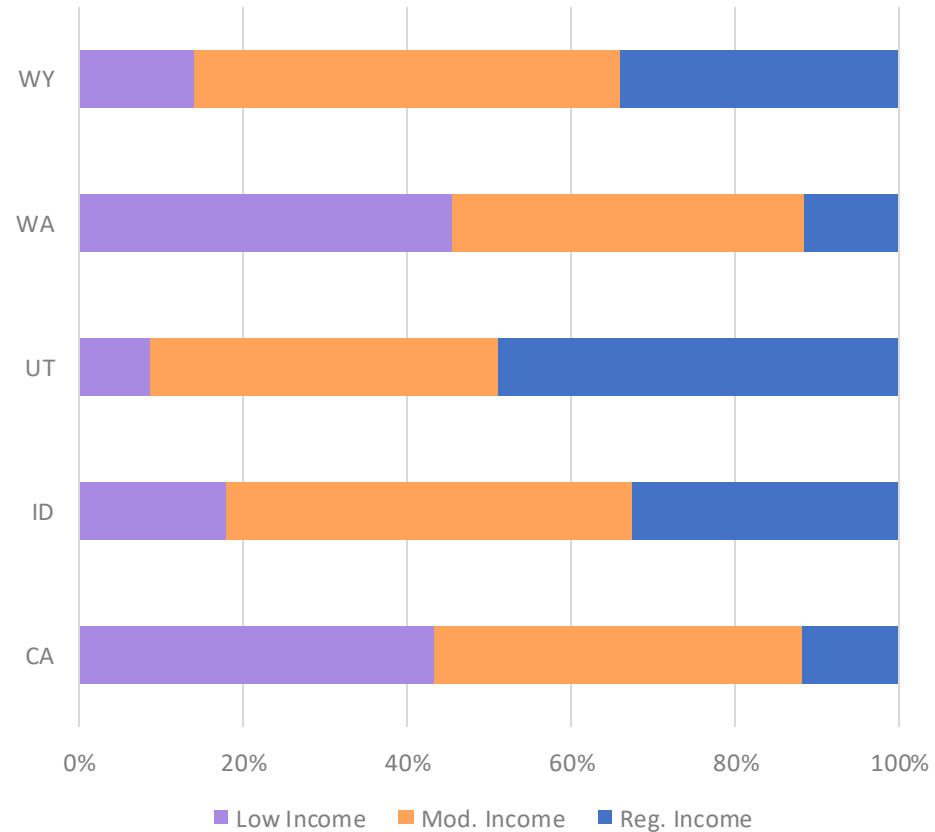
Residential Income-Based Analysis



**20-Year Res ATP Savings Share by Income
All States Except Oregon**



Share of Residential 20-Year ATP by Income and State

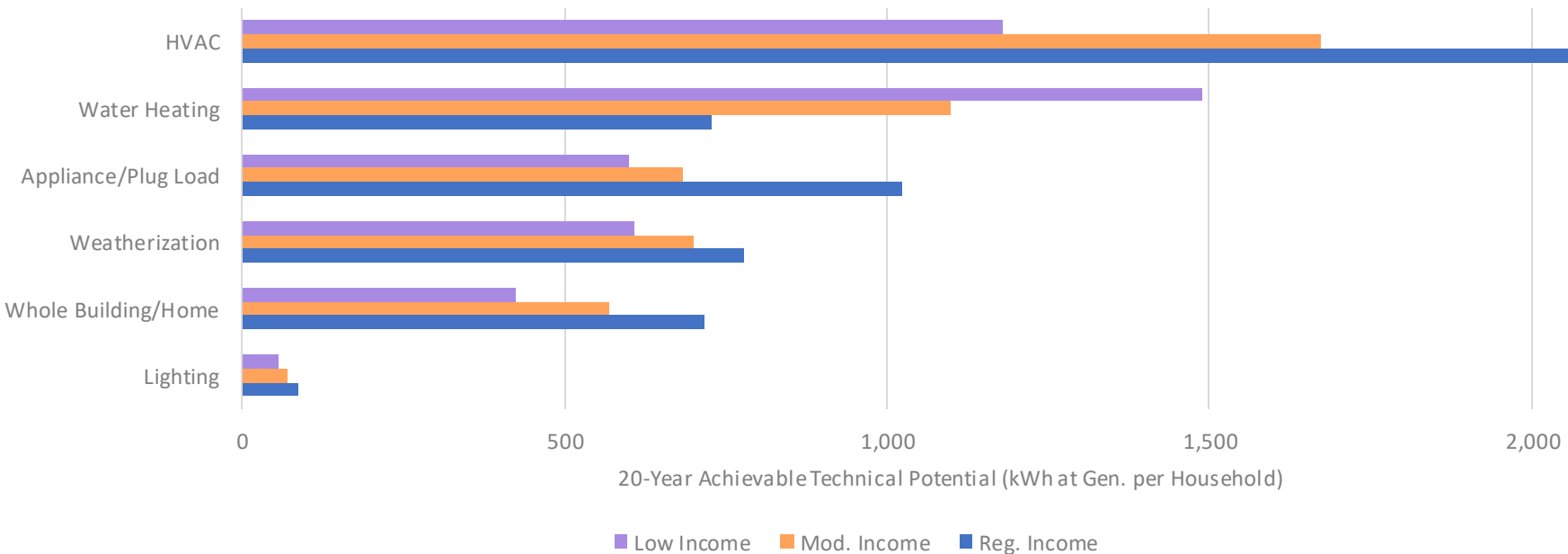


Residential Income-Based Trends



- HVAC, lighting more dependent on household size. Larger income = larger size = more load
- For weatherization, disparity between income levels isn't as large as in HVAC
- For water heating, dependent on number of occupants per household. Typically, more occupants in low-income homes, resulting in higher low-income water heating potential

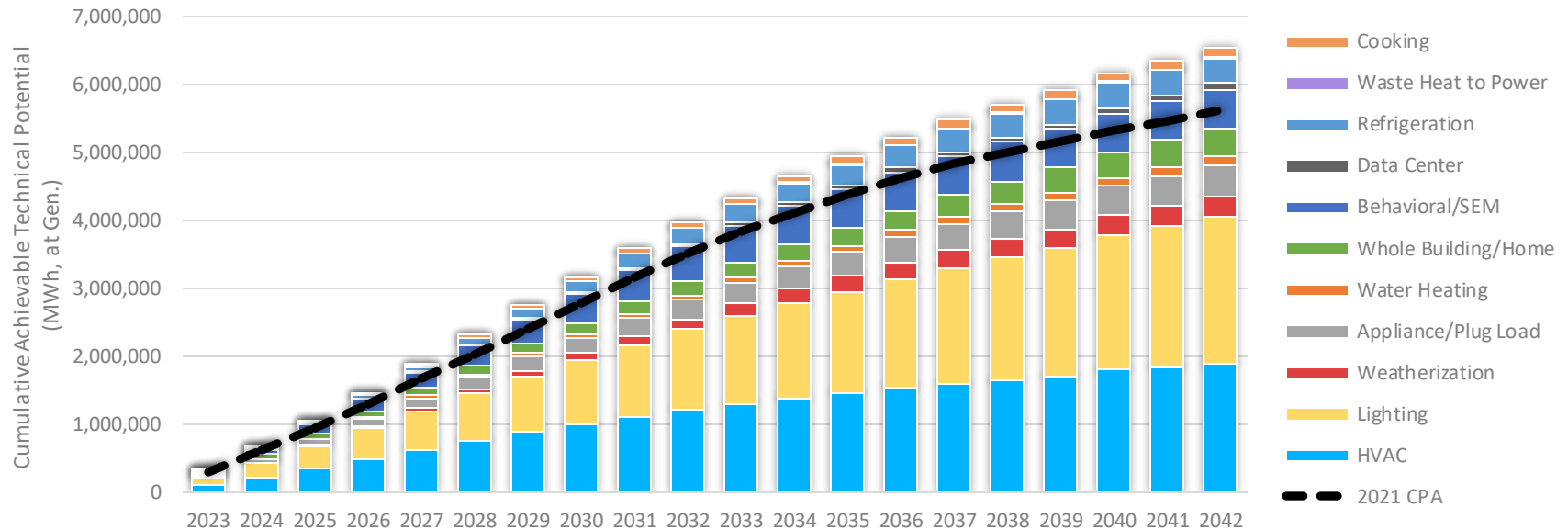
20-Year Res Achievable Tech. Potential per Household by Measure Category and Income Level - All States





Commercial Results

Cumulative Savings by Measure Category (MWh, at Gen.) - All States - Commercial

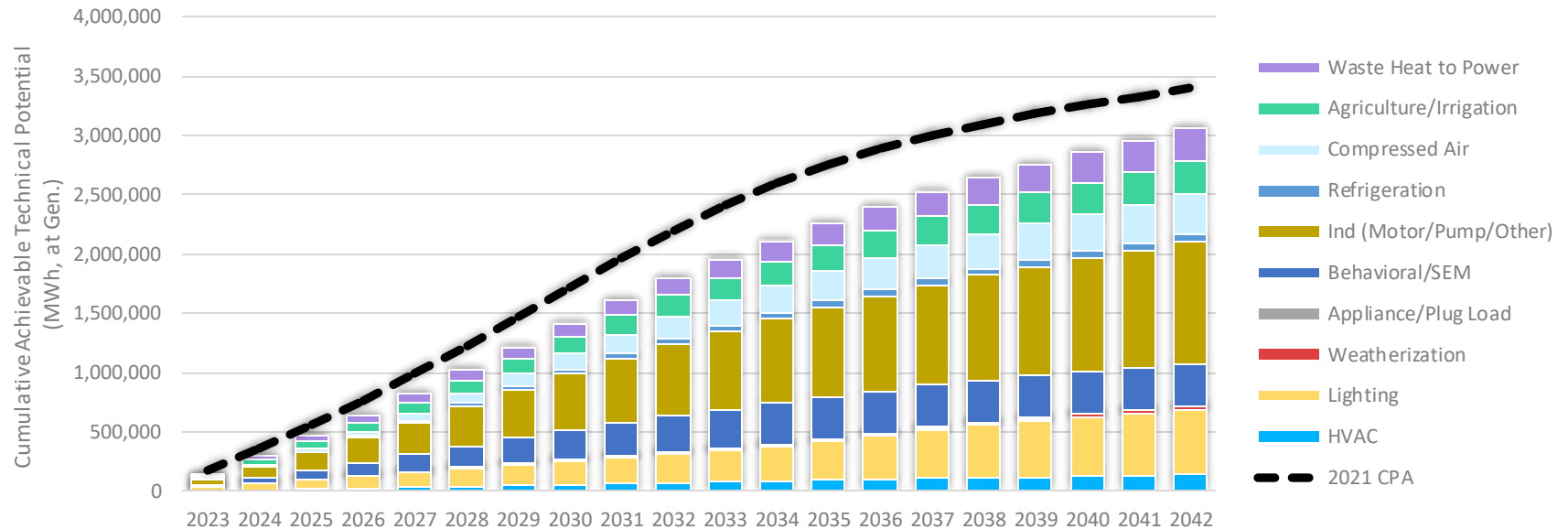


Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total	Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total
1	Linear Lighting	1,677,299	25.7%	6	Ventilation - Variable Speed Control	209,536	3.2%
2	Advanced New Construction Designs	376,227	5.8%	7	High-Bay Lighting	193,865	3.0%
3	Water-Cooled Chiller	289,004	4.4%	8	Retrocommissioning	163,218	2.5%
4	Strategic Energy Management	244,210	3.7%	9	Dedicated Outdoor Air System (DOAS)	137,080	2.1%
5	RTU	218,141	3.3%	10	HVAC - Energy Recovery Ventilator	135,860	2.1%
Total of Top 10 Measures						3,644,440	55.8%



Industrial + Irrigation Results

Cumulative Savings by Measure Category (MWh, at Gen.) - All States - Industrial & Irrigation

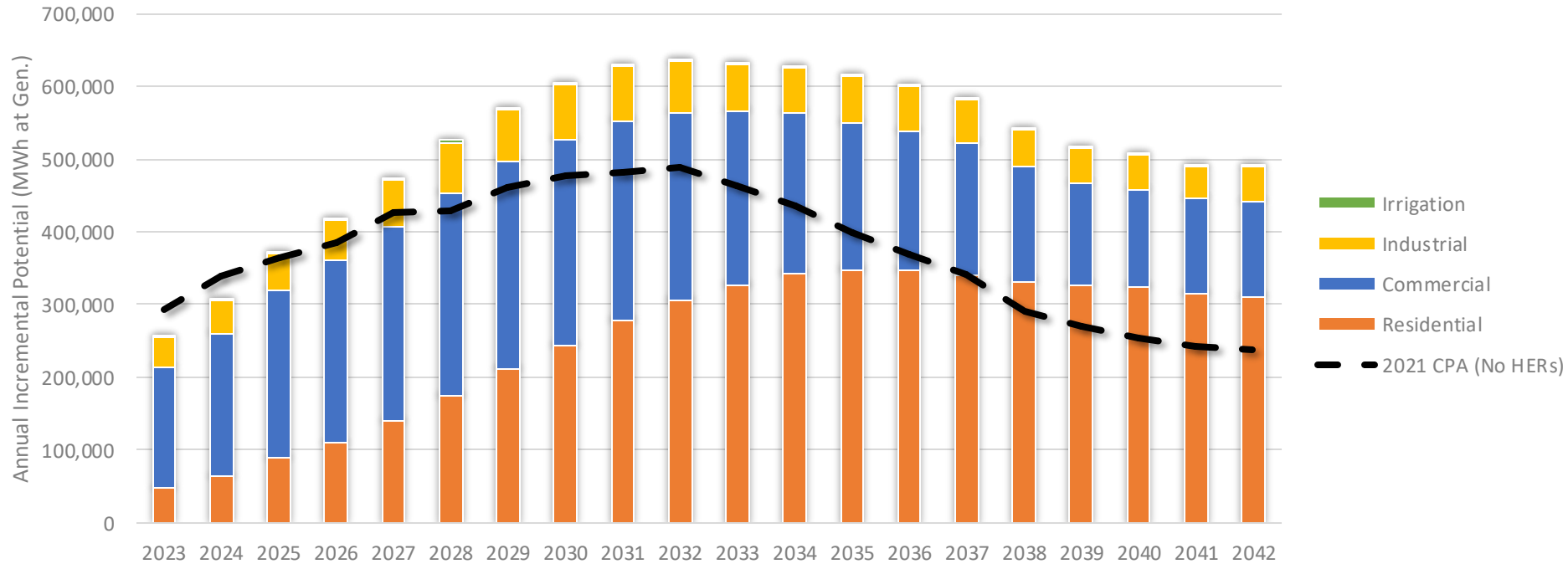


Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total	Rank	Measure Name	Cumulative Savings (MWh at Gen)	% of Total
1	High-Bay Lighting	251,216	8.2%	6	Waste Heat to Power - Organic Rankine	154,437	5.0%
2	Linear Lighting	204,879	6.7%	7	Retrocommissioning	138,363	4.5%
3	Strategic Energy Management	202,625	6.6%	8	Fan System - Equipment Upgrade	101,308	3.3%
4	Pumping System - System Optimization	178,984	5.8%	9	Waste Heat to Power - High Temperature	100,392	3.3%
5	Advanced Industrial Motors	176,452	5.8%	10	Compressed Air - Equipment Upgrade	98,967	3.2%
Total of Top 10 Measures						1,607,622	52.5%

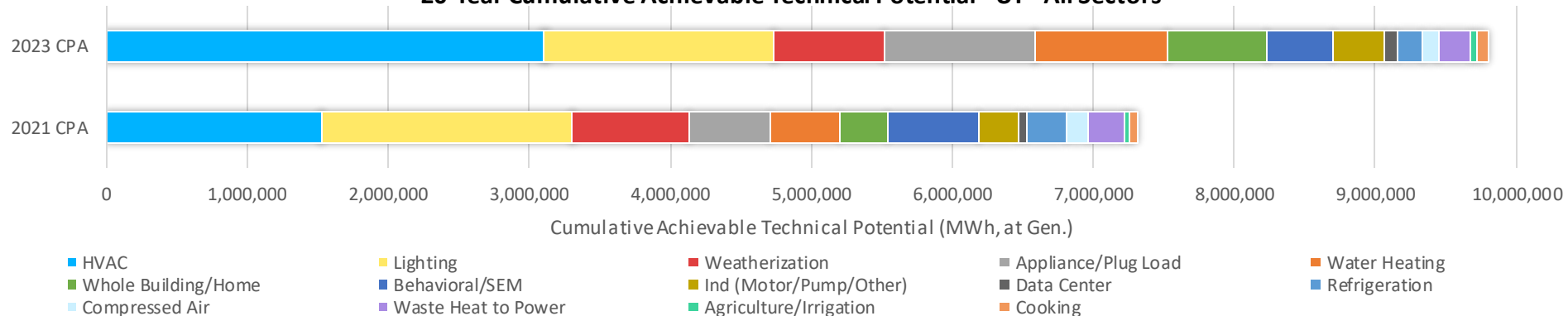


Utah – Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - UT)



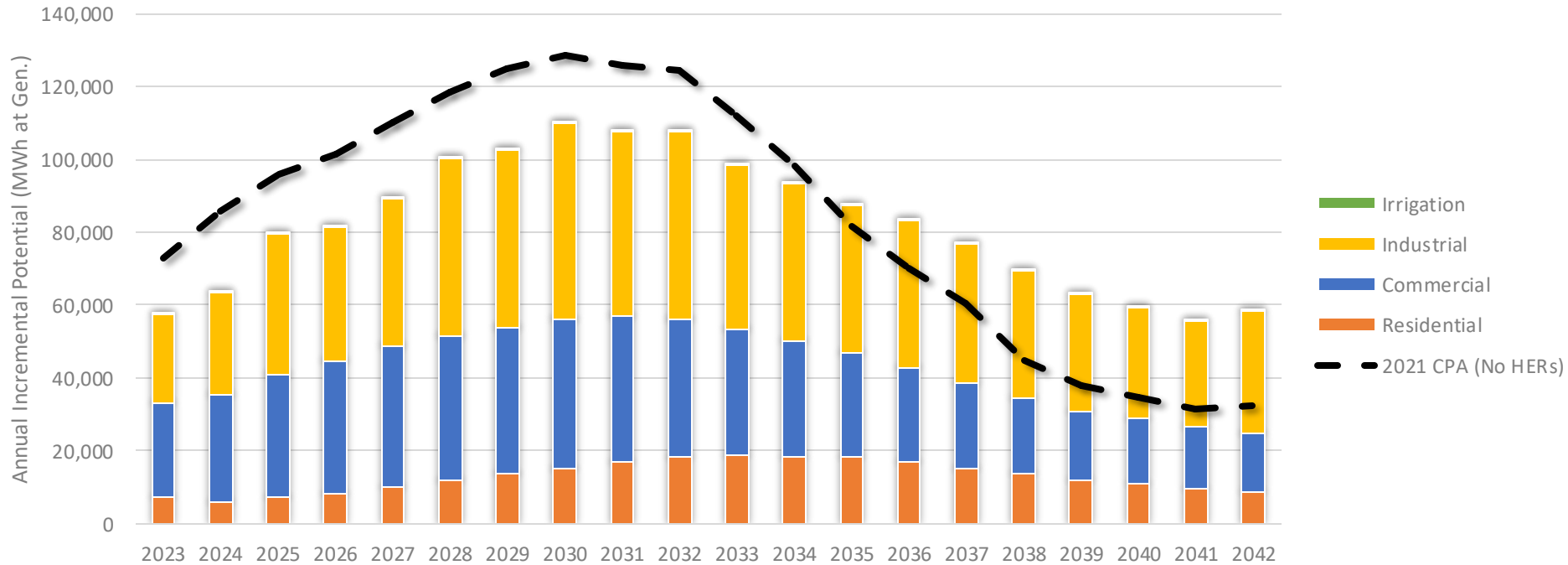
20-Year Cumulative Achievable Technical Potential - UT - All Sectors



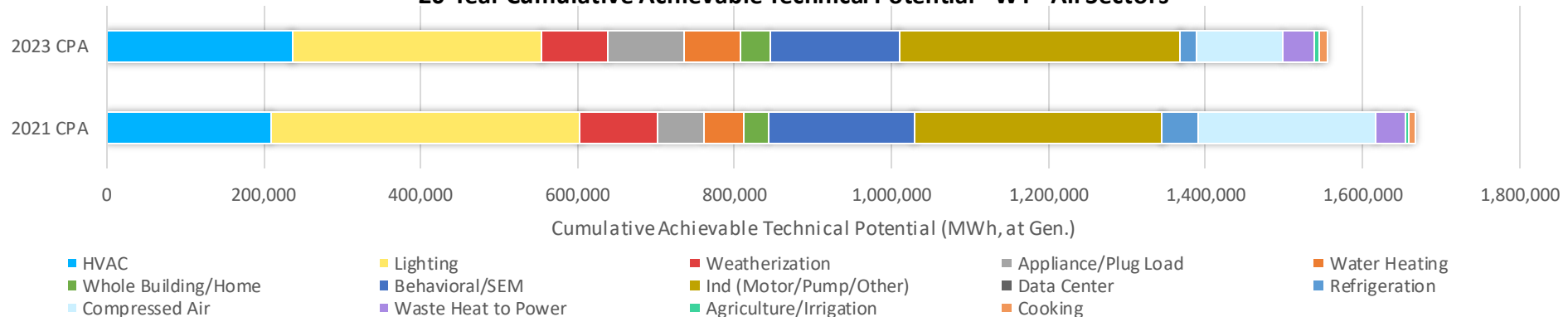


Wyoming – Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - WY)



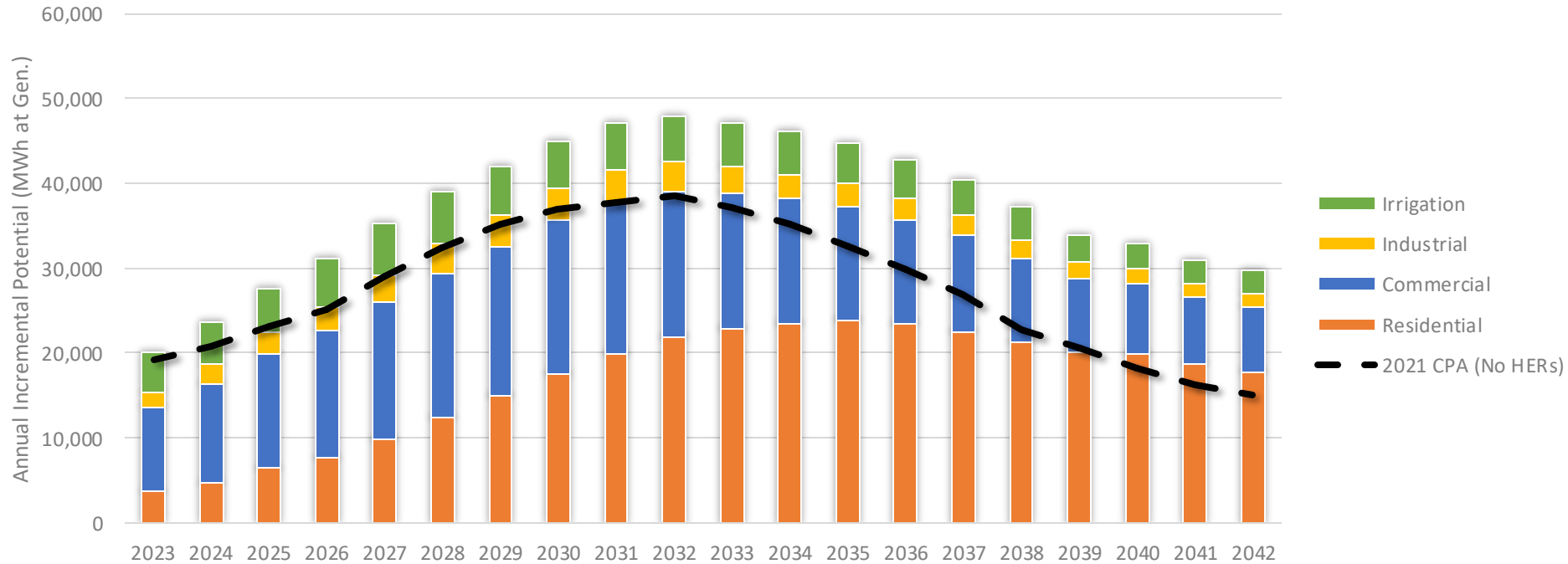
20-Year Cumulative Achievable Technical Potential - WY - All Sectors



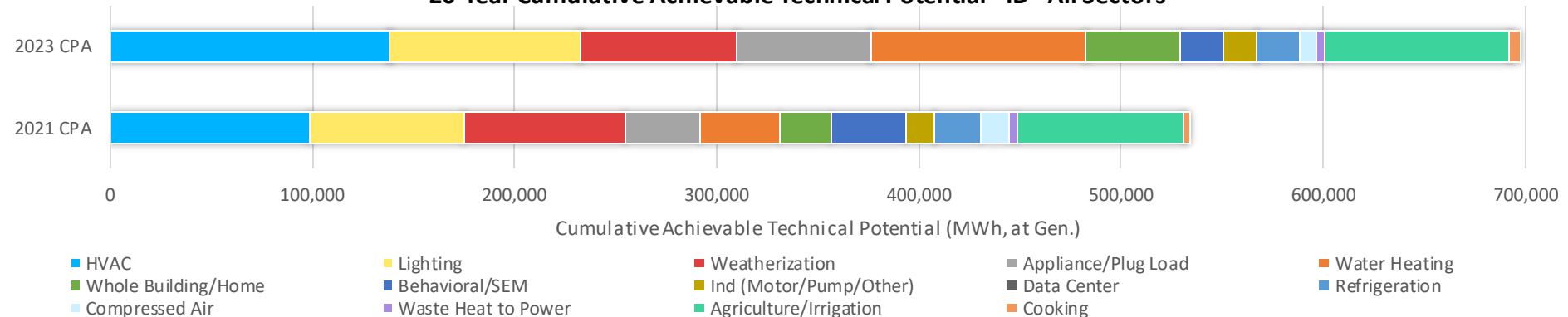


Idaho – Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - ID)



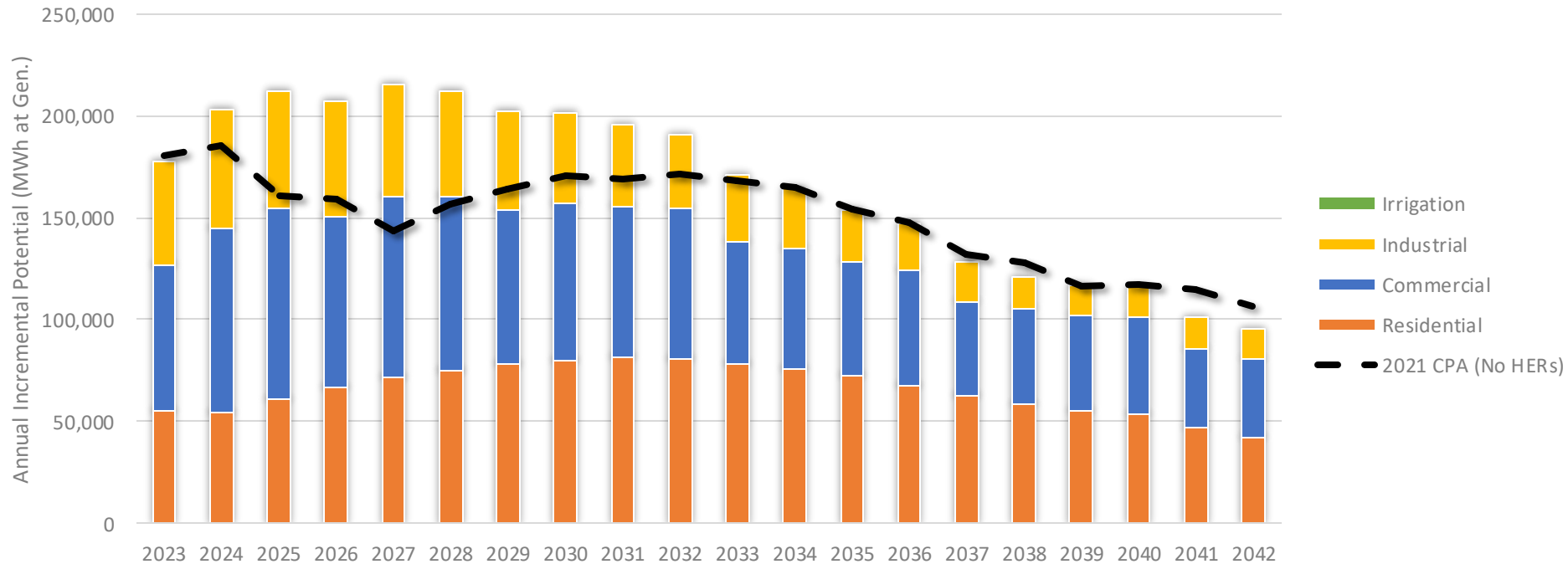
20-Year Cumulative Achievable Technical Potential - ID - All Sectors



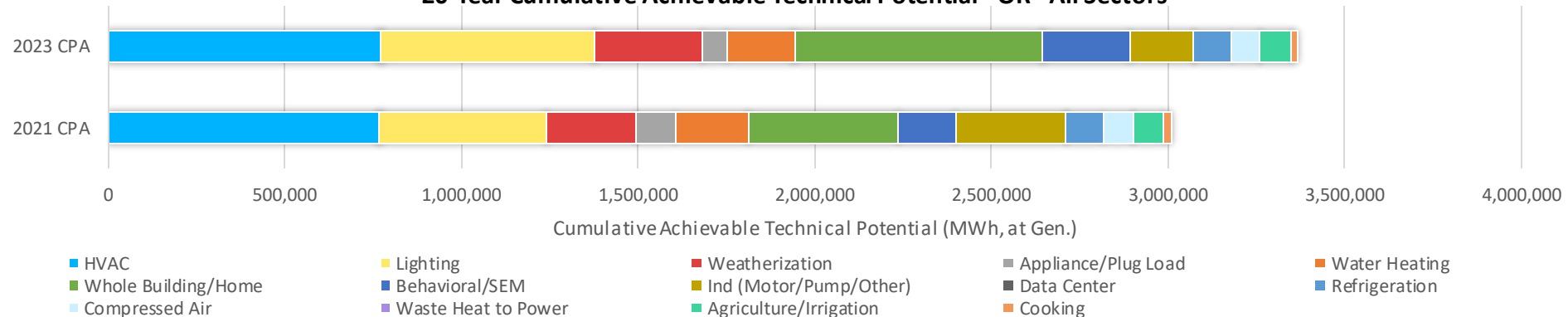


Oregon - Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - OR)



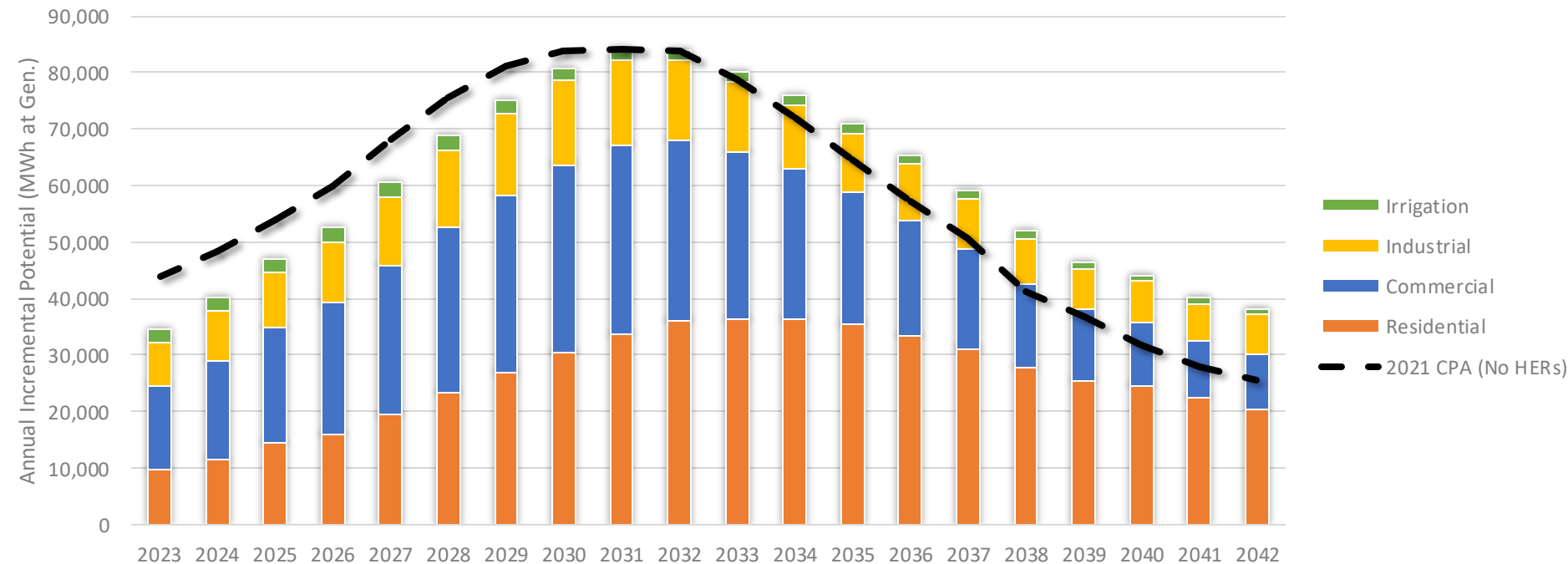
20-Year Cumulative Achievable Technical Potential - OR - All Sectors



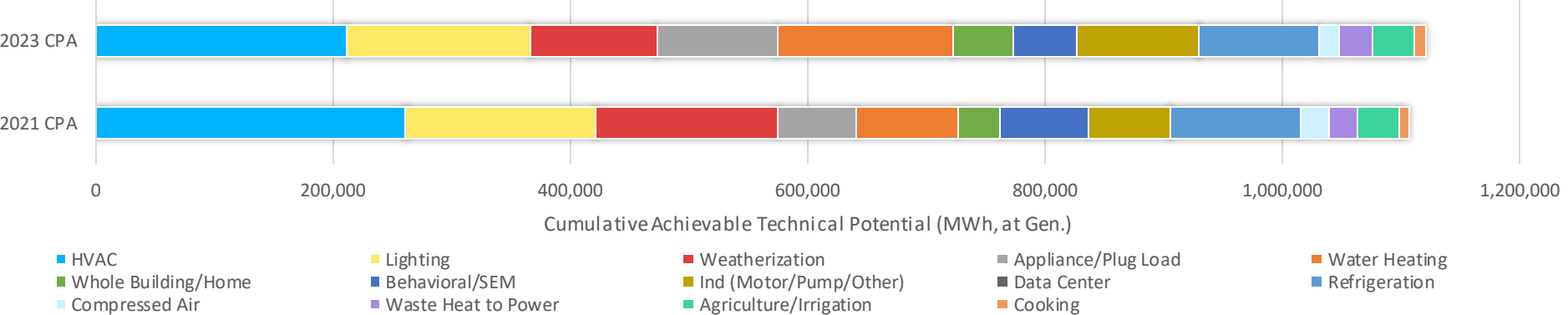


Washington – Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - WA)



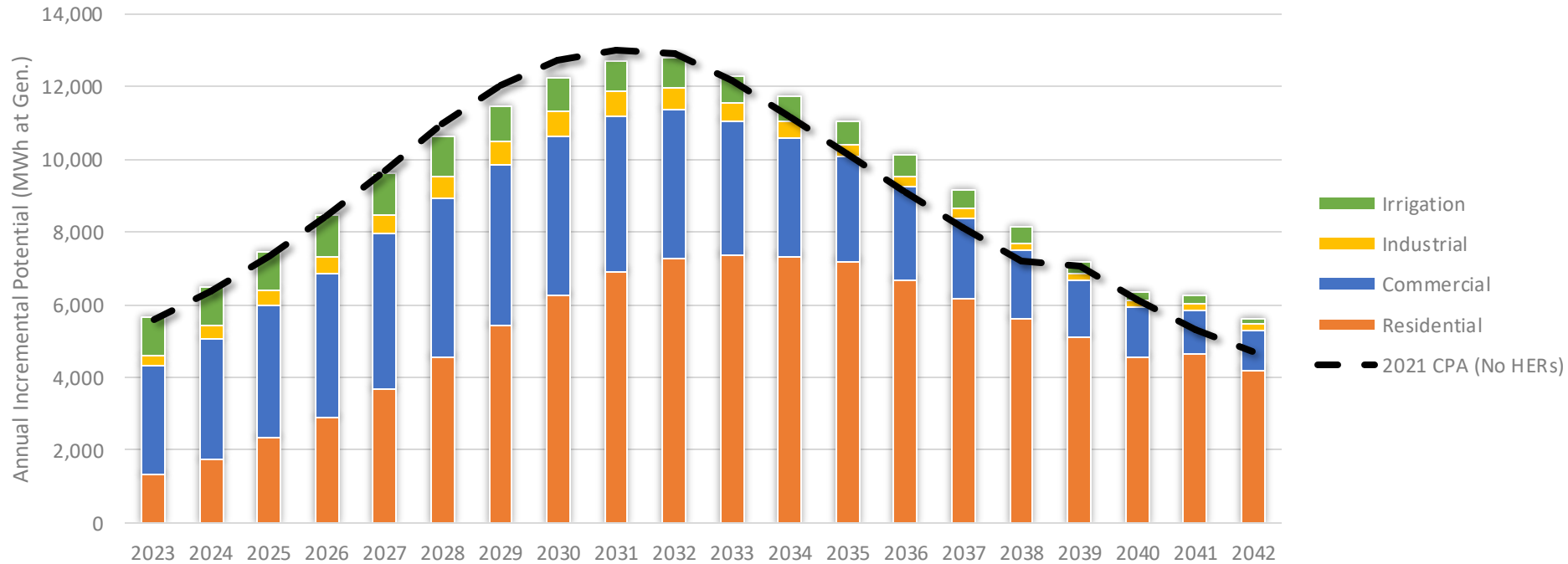
20-Year Cumulative Achievable Technical Potential - WA - All Sectors



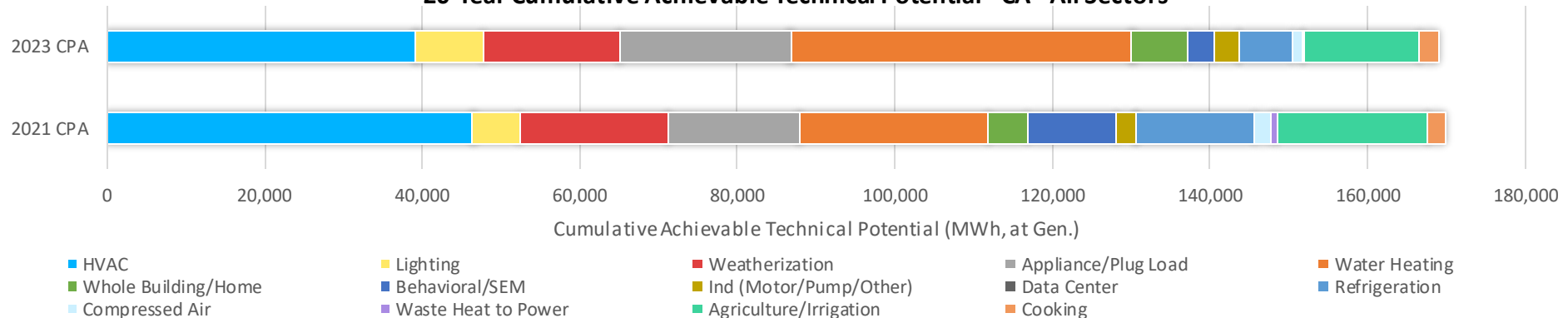


California – Potential Results

Incremental Achievable Potential Potential by Sector (No HERs - CA)



20-Year Cumulative Achievable Technical Potential - CA - All Sectors





Demand Response



DR Potential Methods



1. Program
Characterization

2. Customer
Segmentation

3. Baseline
Peak Demand
Forecast

4. Customer
Eligibility

5. Estimate
Potential

Main Data Sources:

- Existing program data, where available (UT Cool Keeper, UT Batteries, Irrigation Load Control)
- Northwest Power and Conservation Council's 2021 Power Plan
- Regional studies (e.g., 2018 BPA CTA-2045 water heater demonstration report)



DR Resources Assessed

Program Category	Program Bundle	Current/Planned Offering
Direct Load Control (Conventional)	Electric Vehicle Connected Charger Direct Load Control (DLC)	
	HVAC DLC	UT
	Irrigation Load Control	UT, ID, OR, WA
	Pool Pump DLC	
	Domestic Hot Water Heater (DHW) DLC	OR, WA
Direct Load Control (Smart / Interactive)	DLC of Smart Home	
	Grid Interactive Water Heater (GIWH)	OR, WA
	Connected Thermostats DLC	OR, WA
Energy Storage	Battery Energy Storage DLC	UT, ID
Curtailment	Third-Party	ID, UT, OR, WA

Technology Dependencies



Program Option	Eligibility Requirements
Water Heater DLC	Water Heater (electric resistance [ER] or heat pump [HP])
GIWH DLC	Grid-Interactive Water Heater (ER or HP)
Pool Pump DLC	Pool Pump
HVAC DLC	At least one: <ul style="list-style-type: none"> • Central AC • Air-Source Heat Pump • Geothermal Heat Pump • Electric Furnace • Roof Top Unit (RTU)
Third-Party - Fast	Energy Management System
Smart Thermostats	Smart Thermostat + at least one of: <ul style="list-style-type: none"> • Central AC • Air-Source Heat Pump • Geothermal Heat Pump
DLC of Smart Home	Home Energy Management System

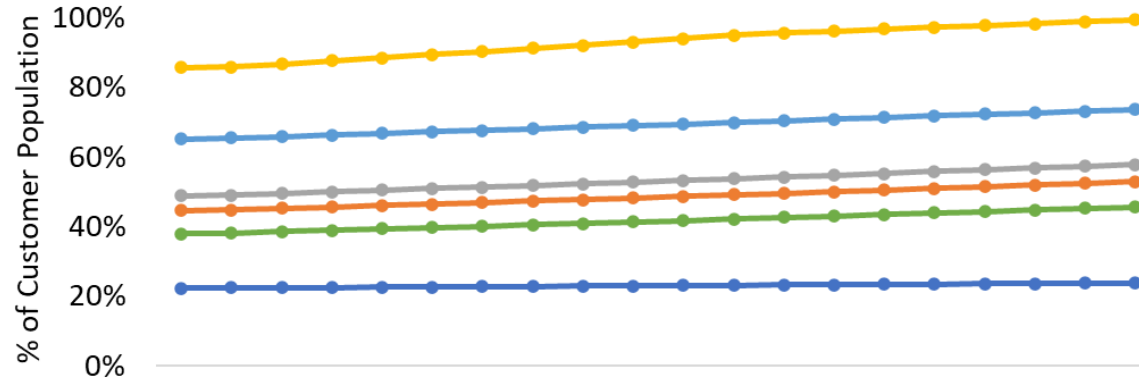
Saturations align with those calculated for the energy efficiency analysis.



HVAC and Control Saturations

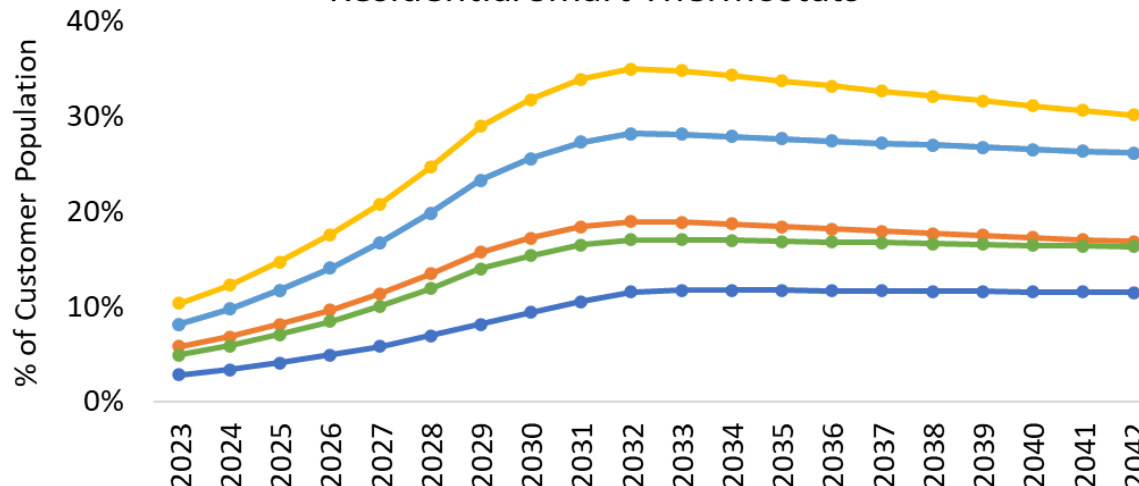
CA ID OR UT WA WY

Residential Central Cooling



Steady levels of central cooling over the study horizon. These customers are eligible for HVAC DLC.

Residential Smart Thermostats



In addition to central cooling, used the adoption of smart thermostats from the energy efficiency analysis to determine eligibility for Bring Your Own Thermostat (BYOT) programs.

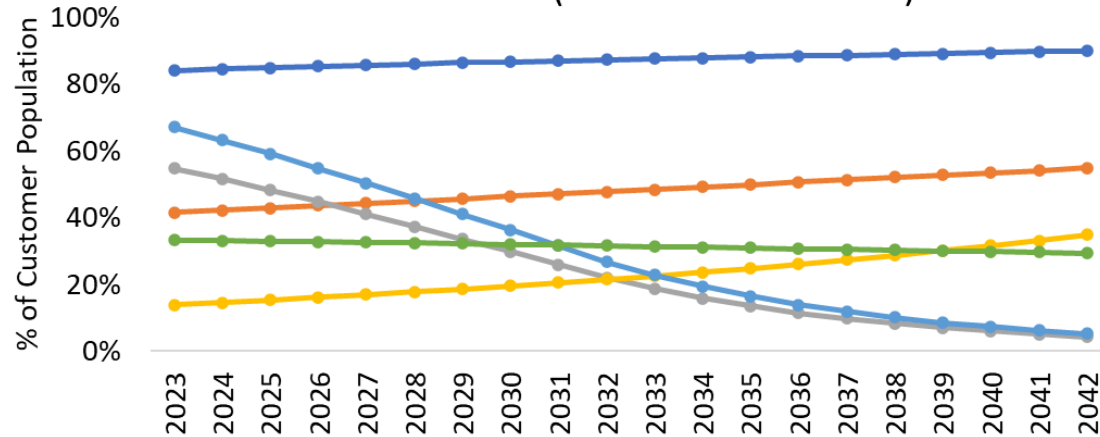
In RMP states, we prioritized HVAC DLC over BYOT.



Water Heater Saturations

CA ID OR UT WA WY

Water Heaters (non-Grid-Interactive)



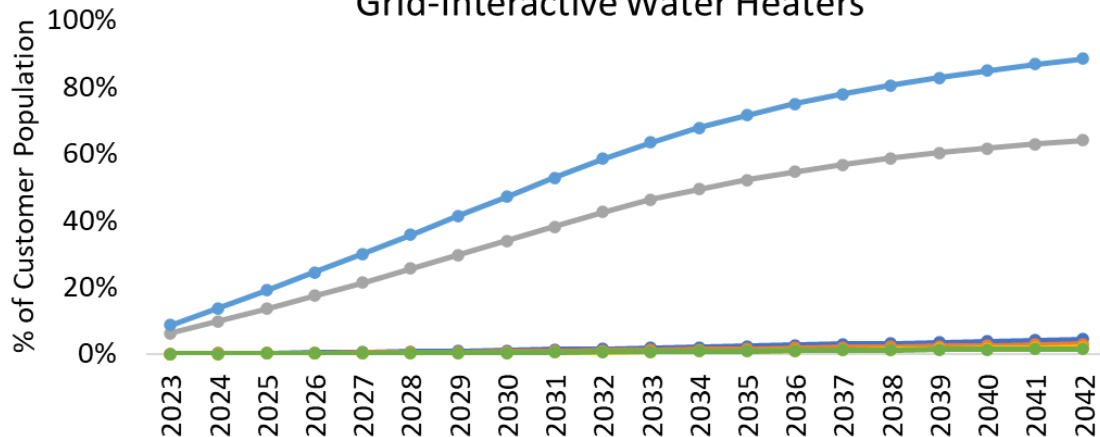
OR and WA are requiring new water heaters to be grid-interactive (e.g., CTA-2045).

Non-GIWH stock decreases as purchased GIWHs saturate the market.

We assumed conservative grid-interactive water heater growth in other states.

In UT, electrification in the baseline drove the growth in electric water heating.

Grid-Interactive Water Heaters



Customer Segmentation



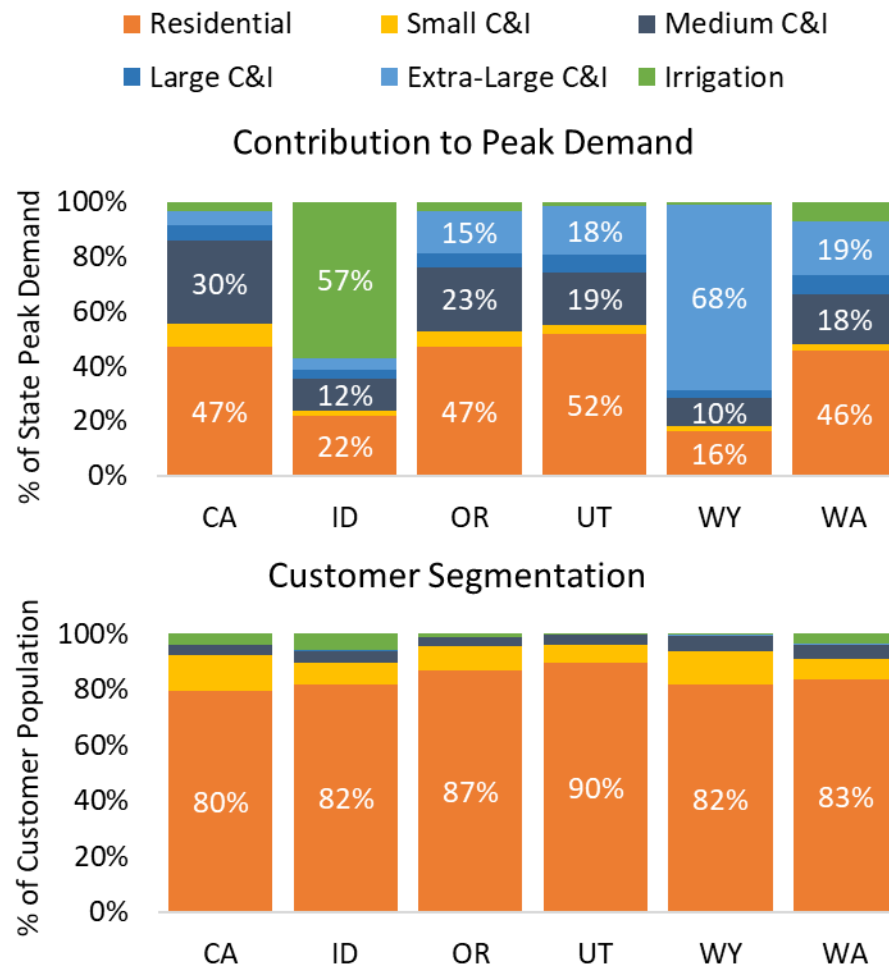
DR programs typically target customers by sector and size.

Used historical peak load data to allocate customers and peak load within states to the sector level.

Used monthly demand* to further segment the C&I population:

Small C&I	< 30 MW
Medium C&I	30-500 MW
Large C&I	500-1,000 MW
Extra-Large C&I	> 1,000 MW

*Non-coincident monthly maximum billed kW.

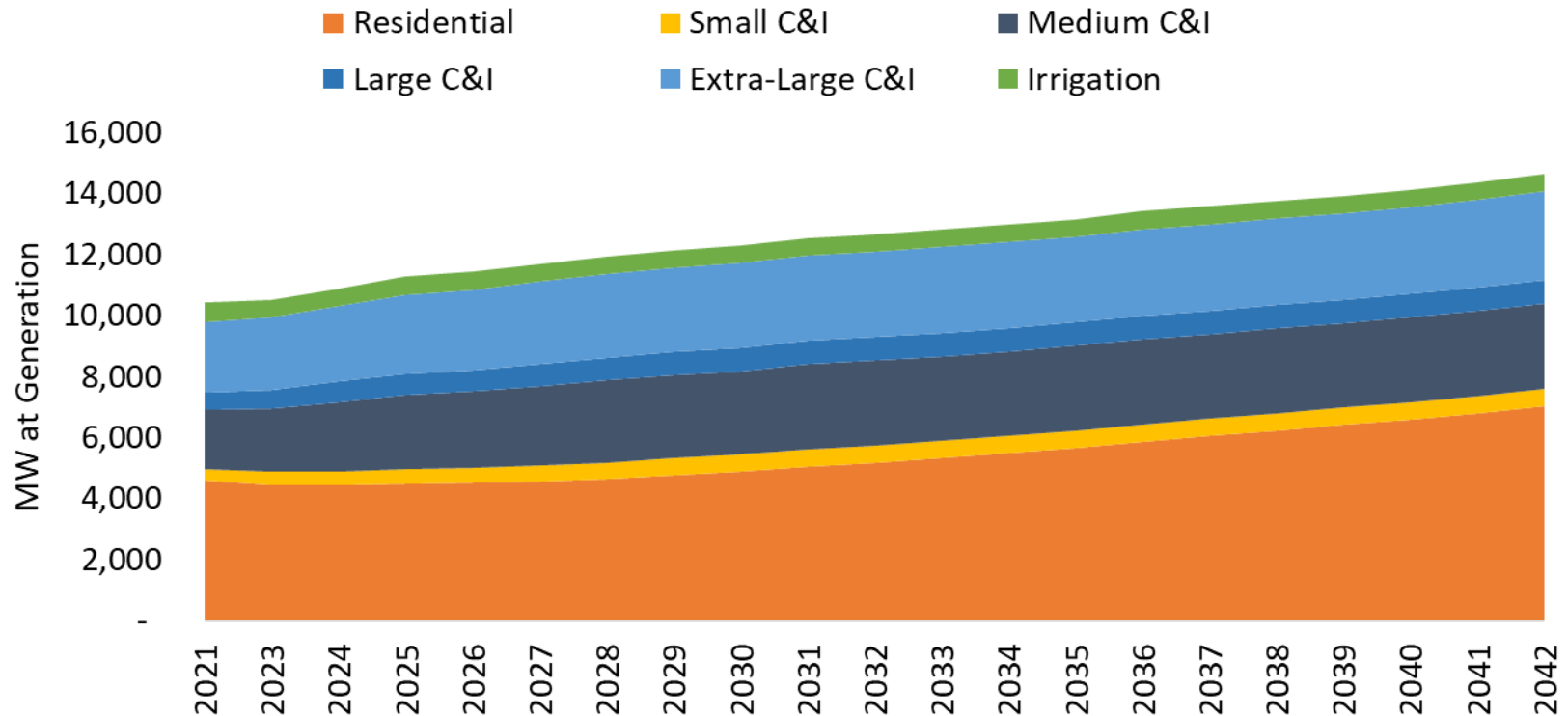


Peak Demand Forecast



Applied the customer segmentation to the utility peak demand forecast, allowing the contribution to peak to change based on the sector-level changes in energy consumption.

Utility Summer Peak Demand Forecast

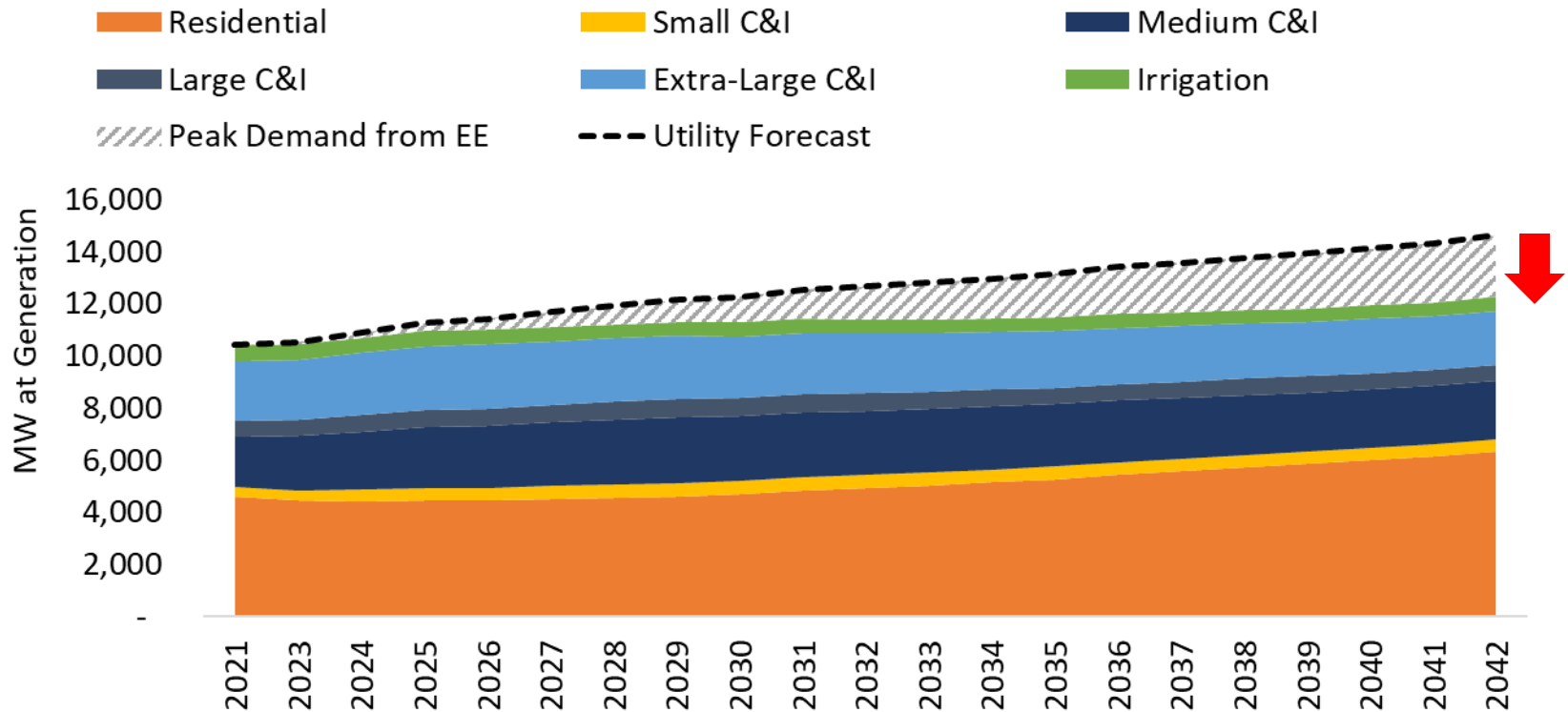


Peak Demand Forecast



Adjusted the utility forecast by removing the peak demand impacts generated through achievable energy efficiency potential to account for interactions between EE and DR and avoid double counting impacts.

Baseline Summer Peak Demand Forecast





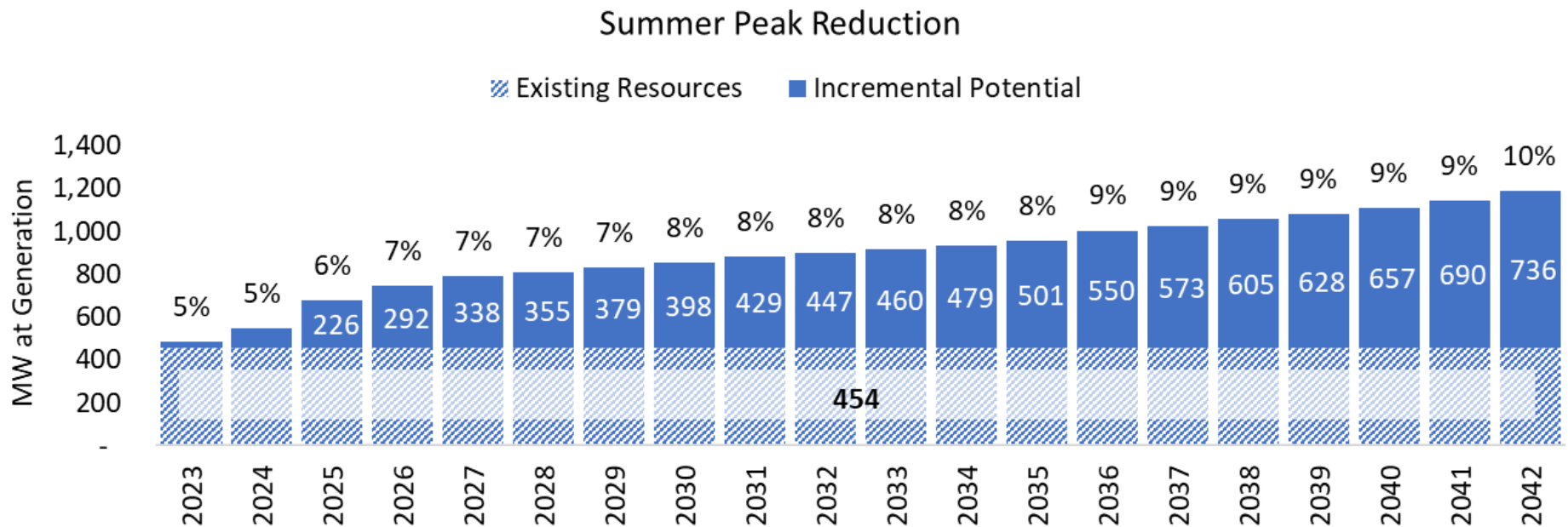
2023 CPA – Demand Response Potential Results



20-Year Potential Summary - Summer



Estimated potential (including existing/planned resources) ranged between 5% and 10% of the baseline peak demand forecast over the 20-year forecast period. DR potential is incremental to any peak demand impacts from energy efficiency.

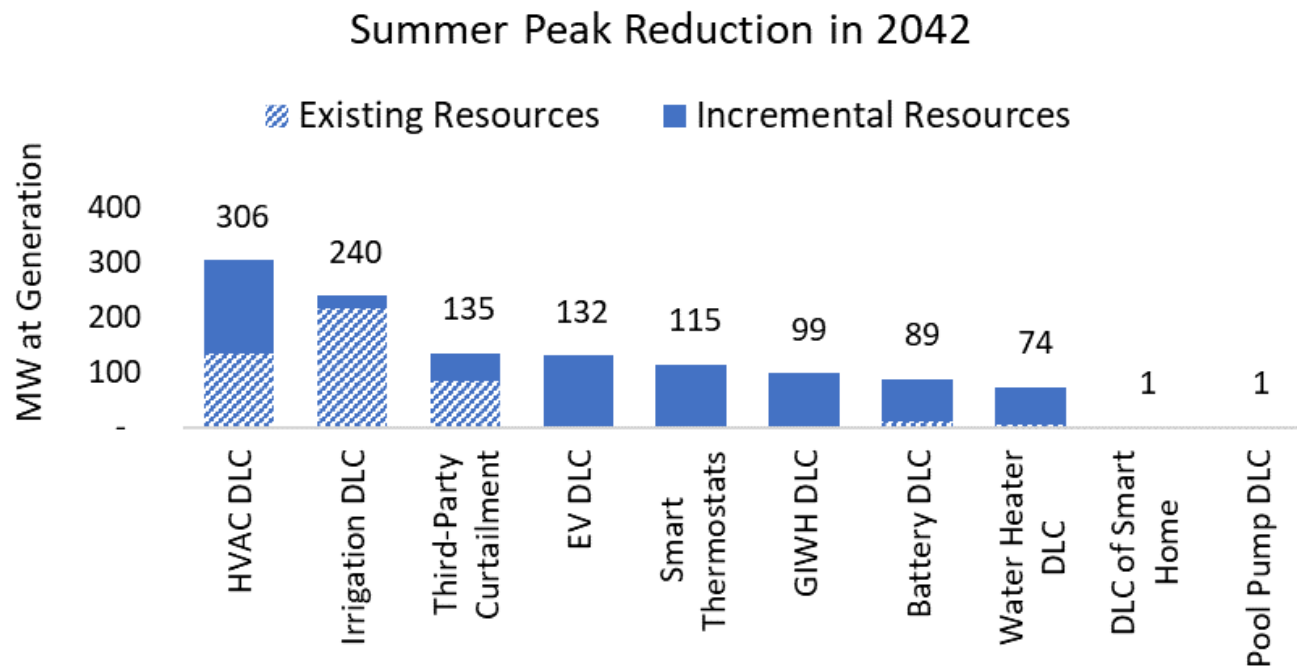


20-Year Potential Summary - Summer



HVAC DLC, Irrigation DLC, and Third-Party Curtailment contributed an estimated 57% of summer DR potential in 2042 (681 MW), much of which came from existing resources.

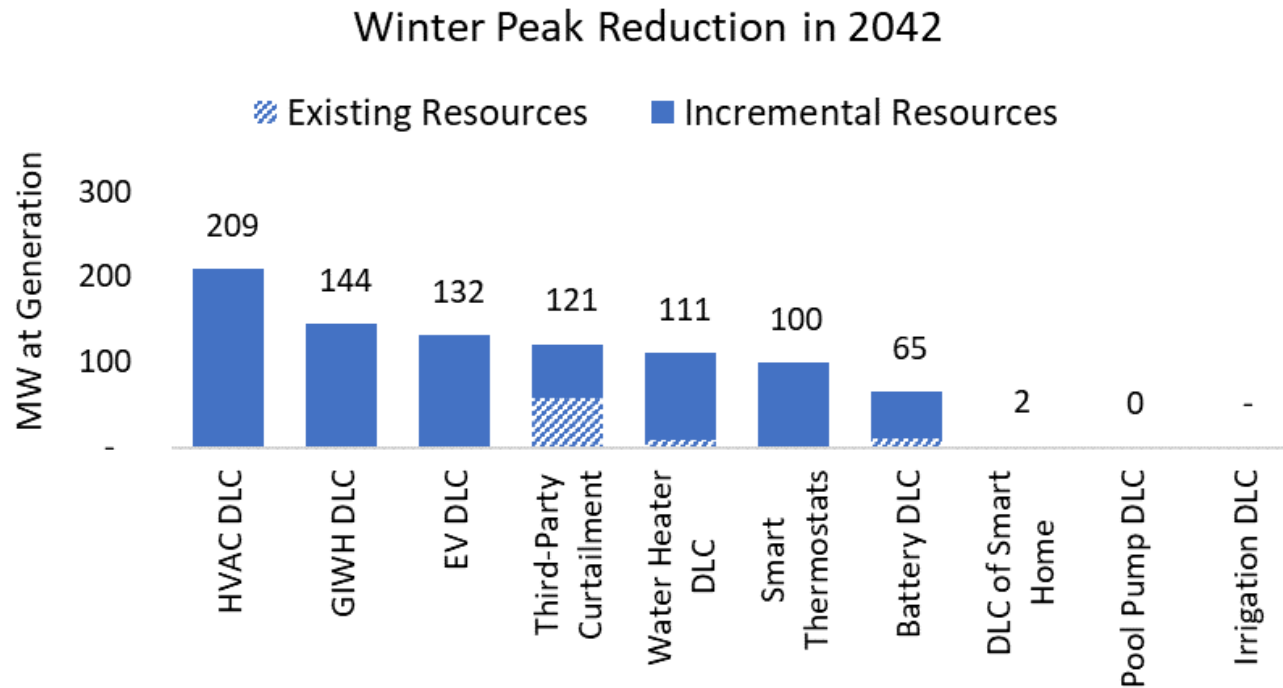
HVAC DLC, EV DLC, and Smart Thermostats contributed most of the incremental potential (416 MW of the 736 MW from incremental potential)



20-Year Potential Summary - Winter



HVAC DLC, Grid-Interactive Water-Heating DLC (GIWH), and EV DLC contributed most of the winter DR potential in 2042 (484 MW of 884 MW in total).



RMP Potential Summary - Summer

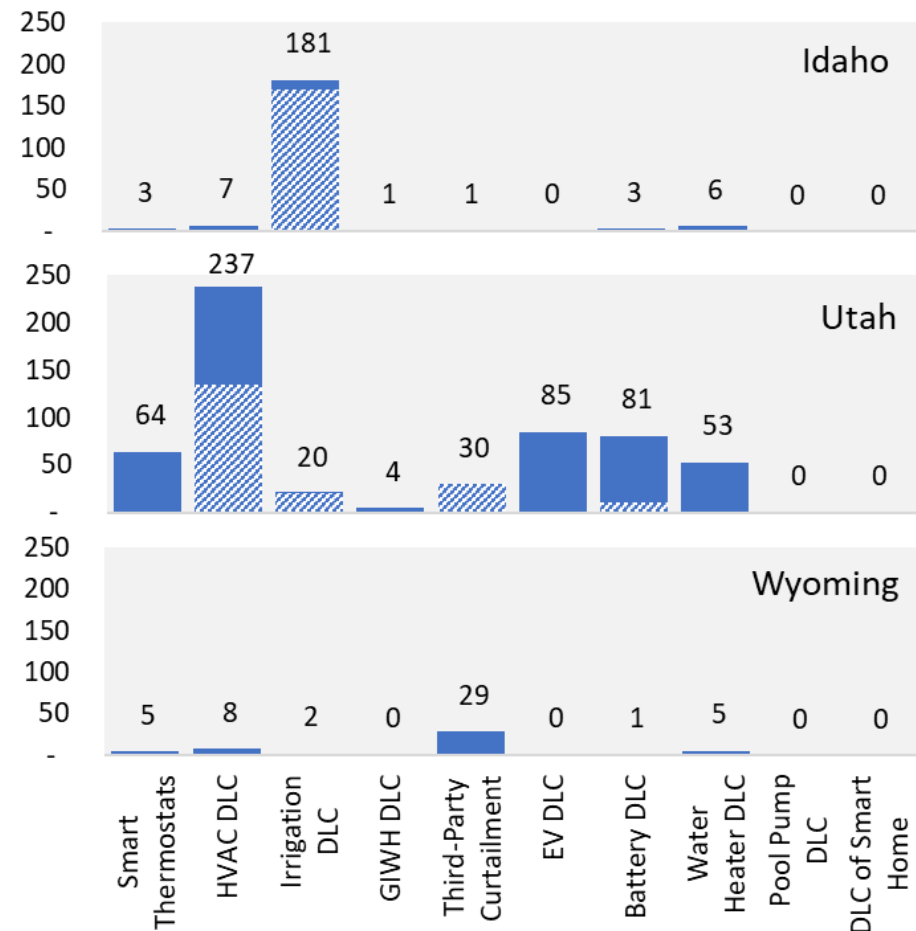


- Rocky Mountain Power potential was driven by existing programs in ID (Irrigation Load Control) and UT (AC Cool Credit, Irrigation Load Control and Curtailment, Wattsmart Batteries).
- Nearly all estimated potential in ID was generated by existing Irrigation DLC.
- Customer and participation growth, electrification led to incremental potential in UT's existing programs.
- New resources contributed just over half (56%) of all estimated summer potential in RMP states in 2042.

Summer Peak Reduction in 2042

Rocky Mountain Power States

Existing Resources Incremental Potential



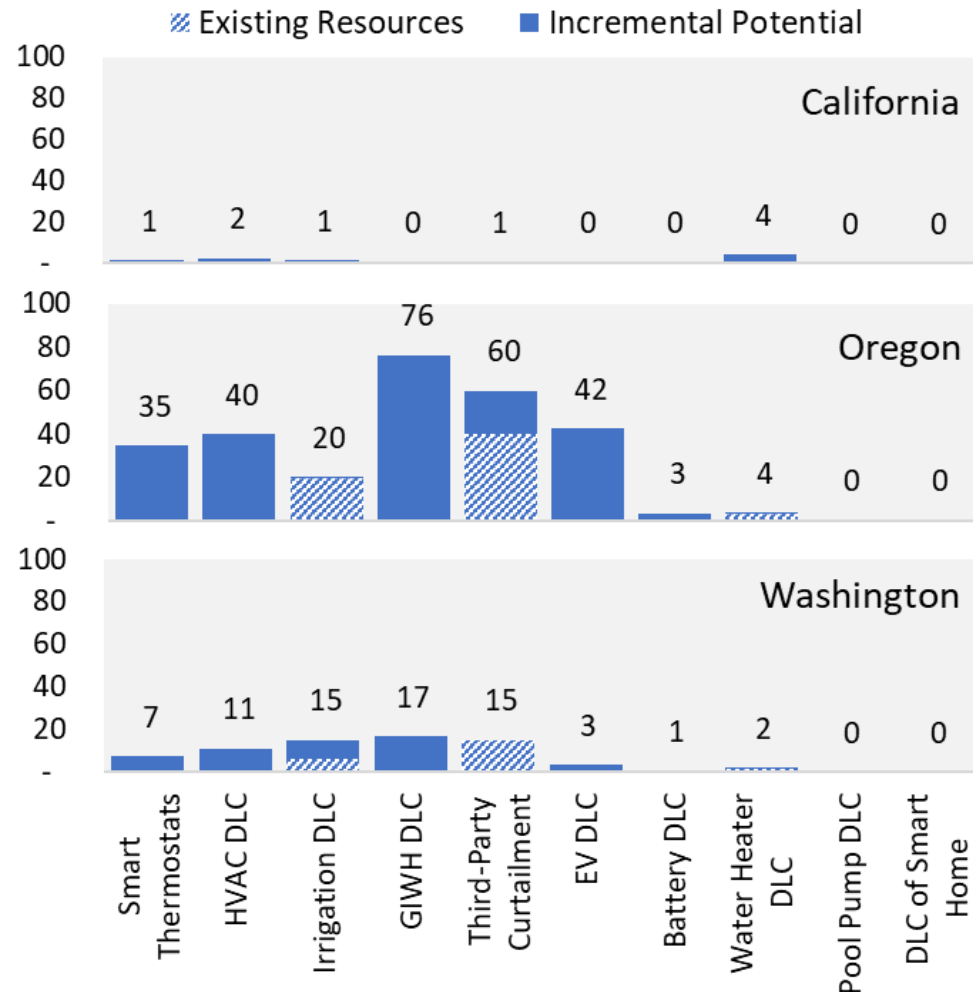


Pac Power Potential Summary - Summer

- Most of the estimated potential in Pacific Power in 2042 was driven by new resources (76%).
- Control of grid-interactive water heaters (GIWH) provided a substantial source of DR potential in 2042—over 25% of summer DR potential in all Pacific Power states was generated by GIWH DLC.
- Water heating savings increase by almost 50% in the winter.

Summer Peak Reduction in 2042

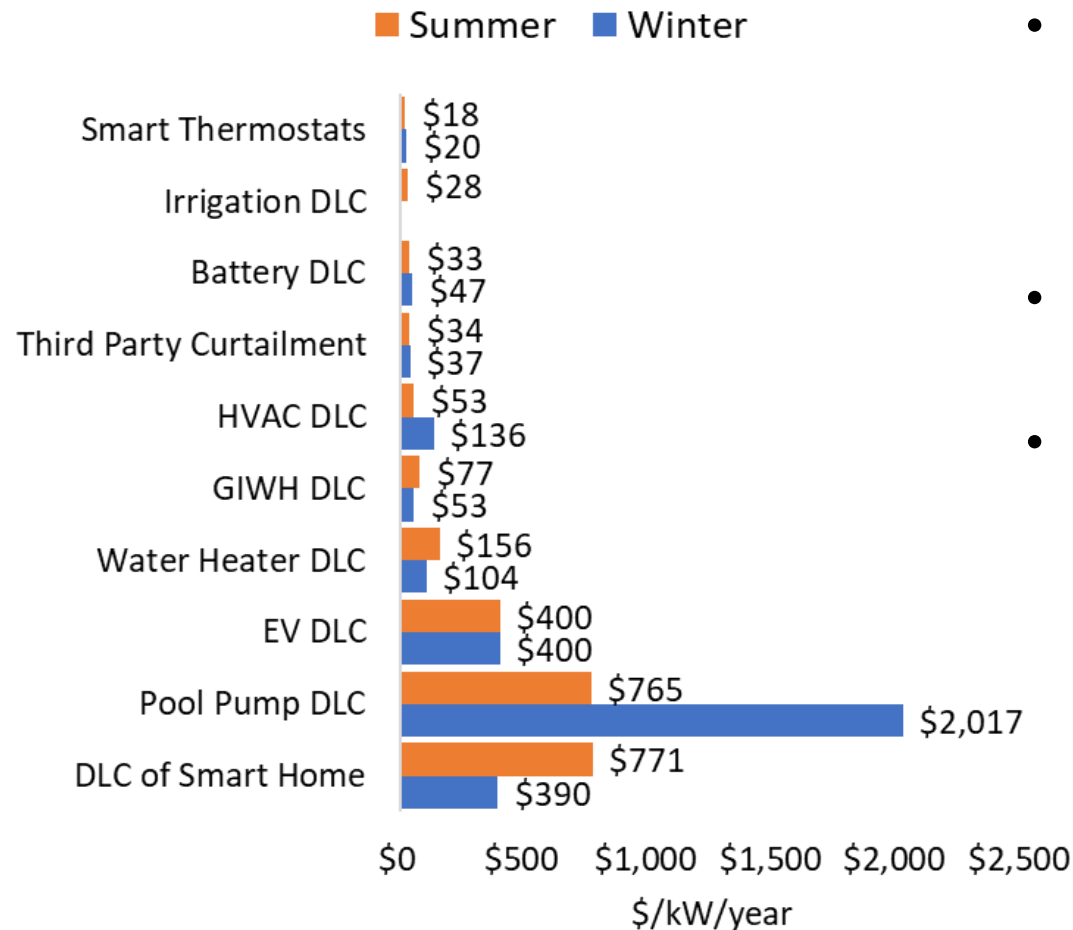
Pacific Power States



5-Year Levelized Costs



5-Year Levelized Costs



- Incorporated incentive de-rate factors for Pacific Power according to the CA DR Cost-Effectiveness Protocol.
- Levelized costs align well with the 2021 Power Plan.
- Costs are split 50/50 between the summer and winter. Levelized costs are doubled if running the program for a single season. (Except for Irrigation DLC, which contributed no winter impacts)



Next Steps

- Input results for model selections
- Prepare draft report for review
- Finalize report
- Conduct SCGHG scenario analysis for energy efficiency selections



State Allocation Methodology



Multi-State Protocol: Status Update



- Presently, PacifiCorp's six-state allocation of resource costs are prescribed by the 2020 Protocol Agreement and the Washington Inter-Jurisdictional Allocation Methodology (WIJAM)
- PacifiCorp is currently involved in settlement negotiations with signatories of the 2020 Protocol through the Framework Issues Working Group.
 - The 2020 Protocol defined a modification of current allocation methods for the period from 1/1/2020 to 12/21/2023
 - Amended the 2017 Protocol for California, Oregon, Idaho, Utah and Wyoming
 - Modified West Control Area ("WCA") allocation method for Washington
 - Also resolves some issues for a future allocation method, subject to resolution of remaining open items, and sets out a process to resolve those remaining issues and finalize a new allocation method ("Post-Interim Period Method") to be effective 1/1/2024 as structured in the 2020 Protocol
- Consistent with the terms, various non-disclosure agreements, and settlement privileges in the various states, these negotiations are confidential.
- The confidential nature of these discussions allows for parties to negotiate in good faith.
- PacifiCorp continues to meet with stakeholders every other month, with significant engagement and involvement by all parties.
- Various options have been proposed by the Company and other parties, and are being assessed.
 - This is necessarily a data and time-intensive process and analysis as stakeholders consider the various nuances of how to set allocation factors going forward.

State Allocations and Resource Planning



- PacifiCorp continues to maintain a system optimization approach in its long-term resource planning and the IRP: the initial modeling is agnostic to state-specific resource and cost allocations.
- To analyze and assess state-specific policies and compliance, a set of state-specific allocations will be applied to all resources' generation and associated costs and characteristics (e.g., carbon emissions).
- Pending settlement of MSP Framework Issues and a Post-Interim allocation methodology, assumptions must be made regarding an allocation framework across the six-state system.
- The allocation methodology will be applied to optimized system portfolios to analyze and evaluate portfolio performance against state-specific policies and requirements:
 - Washington's Clean Energy Transformation Act (CETA) clean energy targets
 - Oregon's HB 2021 / Clean Energy Plan emissions targets
 - Oregon's Small-Scale Renewable Capacity Standard
 - Various state Renewable Portfolio Standards
 - Wyoming HB 200 / low carbon standard for carbon capture utilization and storage technology

Conceptual Framework: State Allocations

- To assess state-specific compliance of a system optimized portfolio, a post-model state-allocation calculation is required:
 - **In the year 2023, allocations are set by the 2020 Protocol and WIJAM.**
 - Resource allocation is primarily based on the System Generation (SG) factor, which is weighted:
 - 75% based on a state's share of load during the coincident peak hour in each month of a year
 - 25% based on a state's share of total load in the year
 - Certain "situs" resources are 100% assigned to specific states:
 - Demand side management – both energy efficiency and demand response
 - New QFs contracts, entered since 1/1/2020
 - Existing QFs, contracted prior through 12/31/2019, starting in 2030
 - Portfolio standard resources and other state-specific initiatives
 - **For 2024 and beyond**, in the absence of a specific resolution of the MSP Framework Issues, PacifiCorp proposes to continue applying allocations based on the SG factor from the 2020 Protocol and WIJAM, unless a particular resource is precluded by any applicable state-specific policies
- The resulting resource allocations will be used to assess state policy compliance (listed on prior slide):
 - Any resource additions made after the system-optimized portfolio is developed will be allocated to the state(s) that need them.
 - The resulting portfolio of system resources and state-specific resources will ensure all state policy requirements are met.



Transmission Interconnection: Cluster Study 2 Results

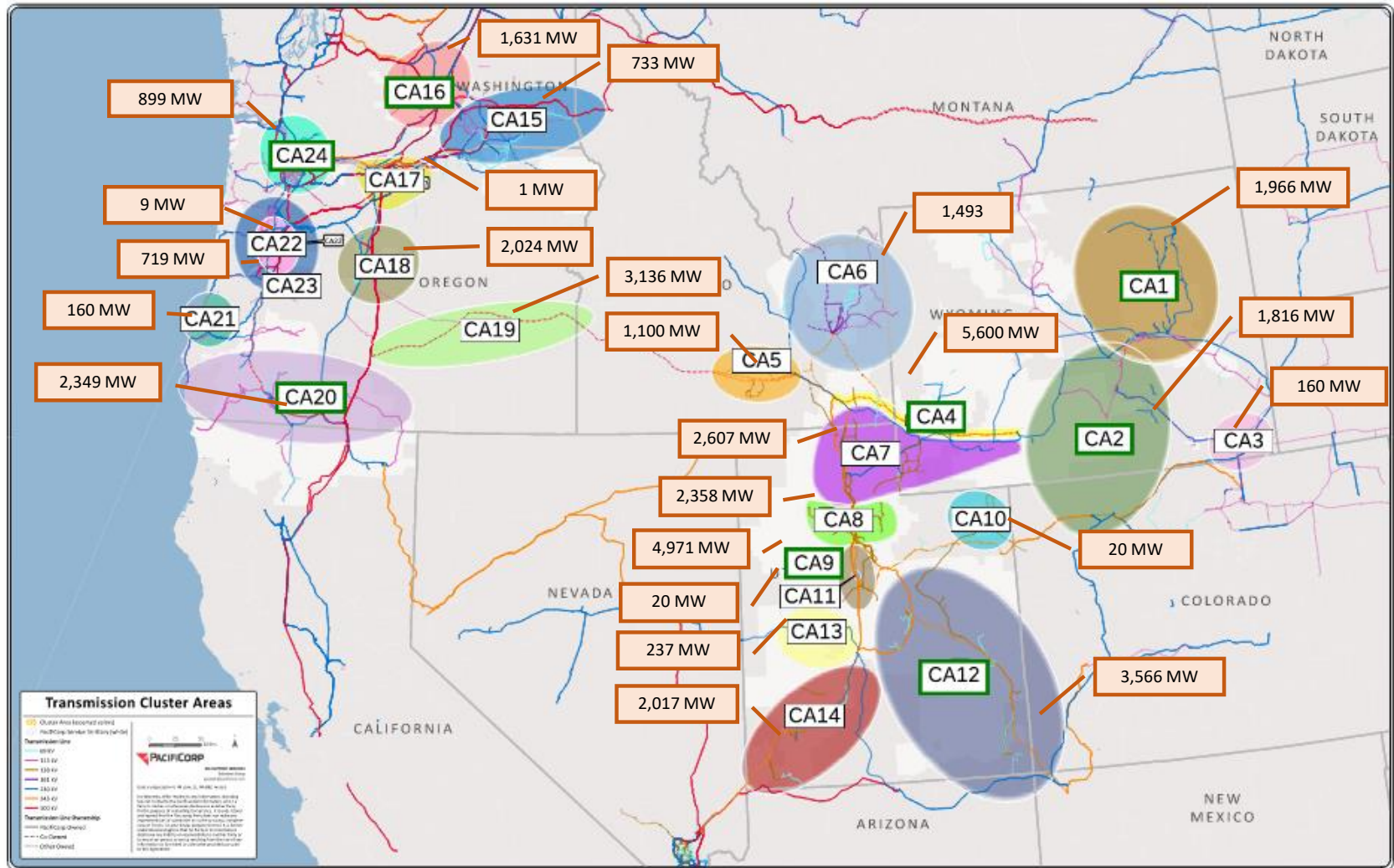


Generation Interconnection: Cluster Study 2



- PacifiCorp uses an annual Cluster Study process to identify transmission upgrades necessary to accommodate new resources. 24 Cluster Studies were recently completed for resource requests submitted in May 2022.
 - Studies are posted online:
https://www.oasis.oati.com/woa/docs/PPW/PPWdocs/Cluster2_ClusterStudies.htm
 - For more on interconnection and the IRP, see PacifiCorp's June 10, 2022 public input meeting.
- Transmission upgrade options for the 2023 IRP were previously identified in PacifiCorp's Oct. 13, 2022 public input meeting.
- The Cluster Study 2 results may replace or augment options previously identified, depending on the particulars of each cluster location. This is still being evaluated.
- Key Cluster Study 2 details are provided on the next two slides.

Cluster Study 2 Map



Cluster Study 2 Summary



Cluster	Location	Network Upgrades \$/kW	Requests MW	Cluster Project Date	Contingent Project Date	Major Contingent	Major Upgrades
CA01	northeastern Wyoming	\$ 1,041	1,966	2029	Q4 2027	D3	D3.2, D1.2, Casper-Anticline 500 kV
CA02	southeastern Wyoming	\$ 1,234	1,816	2029	Q4 2027	GWS, D3	GWS.2, D1.2
CA03	Laramie	\$ 730	160	2029	Q4 2027	GWS, D3	Fort Sander-Foote Creek-Standpipe 230 kV
CA04	Bridger System	\$ 1,389	5,600	2031	Q4 2027	D3	D3.2 x 5, Populus-Terminal 500 kV x 2, GWS.2
CA05	Borah West	\$ -	1,100	2026	Q4 2024	NRIS: B2H, SegE	n/a
CA06	Goshen	\$ 700	1,493	2029	Q4 2030		Goshen-Populus-Terminal 345 kV
CA07	NUT	\$ 305	2,607	[tbd]	[2024]	Q799	Naughton-Ben Lomond 345 kV x 2
CA08	Salt Lake Valley	\$ 48	2,358	2028	Q4 2024		138 kV upgrades
CA09	Clover	\$ 52	4,971	2029	Q4 2027	GWS, SFM	Mona-Mercer-Camp Williams 345 kV
CA10	Ashley	\$ 42	20	2026	n/a		n/a
CA11	Nebo	\$ 187	20	2026	n/a		n/a
CA12	southeast Utah	\$ 494	3,566	2029	Q4 2027	GWS, SFM	Emery/Pinto/Clover/Huntington 345 kV
CA13	Pavant	\$ 331	237	2029	Q4 2027	SFM	Pavant-Sigurd 230 kV
CA14	southwest Utah	\$ 716	2,017	2029	Q3 2028	GWS, SFM	Sigurd/Clover/Various 345 kV
CA15	Walla Walla	\$ 40	733	2026	Q2 2027	NRIS: B2H, SegE	NRIS: Longhorn-Cold Springs 500kV
CA16	Yakima	\$ 129	1,631	2029	Q4 2025	NRIS: B2H, SegE	Union Gap/Midway/Various 230 kV/115 kV
CA17	northeast Oregon	\$ 770	1	2025	n/a		n/a
CA18	central Oregon	\$ 103	2,024	2028	[tbd]	NRIS: B2H, SegE	North Corral 500/230 kV Substation
CA19	eastern Oregon	\$ 0	3,136	2029	Q4 2026	NRIS: B2H, SegE	Burns-Summer Lake #2 500 kV
CA20	southern OR/northern CA	\$ 379	2,349	2029	Q4 2028	NRIS: B2H, SegE	Lane/Dixonville/Sams Valley/Various 500 kV
CA21	Coos Bay	\$ 10	160	2026	n/a		NRIS: Dixonville-Isthmus 230 kV
CA22	Albany	\$ 81	9	2025	n/a		n/a
CA23	Willamette Valley	\$ 2	719	2026	2023		n/a
CA24	Portland	\$ 270	899	2029	n/a		Swift/Various 230 kV / 115 kV

Total **39,591**

SFM: Spanish Fork-Mercer 345 kV

NRIS: Network Integration Interconnection Service (supports transfers to less constrained parts of the system)

All results subject to change. Cluster Project Date includes 12 months to complete Facilities Study and execute LGIA.



Initial Risk and Reliability Study Plan



Initial Risk and Reliability Study



PacifiCorp is preparing a pair of studies to evaluate risk and reliability:

- Hourly deterministic analysis: 1 iteration with “normal” conditions
 - Same “ST” model analysis normally reported for each portfolio.
 - Identify hourly loss of load events and hourly marginal energy prices.
- Hourly stochastic analysis: 50 iterations with a range of conditions
 - Very processor intensive: normal ST model x 50. Four years to be evaluated: 2025, 2030, 2035, 2040
 - Identify hourly loss of load probability (LOLP) and hourly marginal energy prices.

Analysis - Higher average loss of load probability and marginal energy prices expected in stochastics vs “normal”

Initial Risk and Reliability Study



Outputs that will set targets for use in the 2023 IRP:

- Planning Reserve Requirements:
 - Identify generic incremental stochastic requirement above “normal” conditions.
 - Requirements expected to vary over time, primarily as a result of the evolution of the portfolio.
 - For example, higher penetration of storage will increase the need for long-duration resources.
 - Reliability under “normal” conditions is calculated for every portfolio.
 - Reliable portfolios need to have adequate resources to cover both portfolio-specific “normal” shortfalls plus the generic incremental stochastic requirements.
- Energy Efficiency Bundling
 - Net cost of each measure incorporates capacity contribution (calculated from LOLP) and marginal energy value. Measures with similar net costs be bundled.
- Stochastic Risk Adjustment
 - Difference in resource value between stochastic and “normal” conditions
 - This credit has previously been applied to energy efficiency only
 - The results may indicate whether other resource types have significant impacts on risk



State Policy Update



Utah Community Renewable Program (HB411)



Overview:

- Created an opt-out program with a goal of being 100% net renewable by 2030.
- Cities and communities elect to participate on behalf of their residents. Customers within a participating community may opt out of the program and maintain existing rates
- The legislation prohibits cost shifting to other non-participating customers.

Timeline:

- April 2019 – Utah passes HB 411
- December 2019
 - 23 Utah communities pass a resolution to be 100% renewable by 2030 as required by the statute for participation. 18 of the 23 eligible communities have officially taken the next step in their participation by signing the Governance Agreement.
 - The Utah Public Service Commission adopts administrative rules to facilitate the program
- January 2022 – program design meetings begin and are currently ongoing

Wyoming House Bill 200



Overview:

- Required the Wyoming Public Service Commission to establish administrative rules requiring public utilities to develop low carbon portfolio standards utilizing carbon capture, utilization and storage (CCUS) by 2030
- Requirement would apply to generation allocated to Wyoming customers only
- Two percent cost cap is specified in the legislation to limit customer impact

Timeline:

- Low carbon portfolio standard administrative rules went into effect on January 3, 2022
- PacifiCorp filed its initial application on March 31, 2022 requesting to conduct a request for proposal (RFP) process to conduct further analysis to determine if CCUS is technically and financially feasible for Jim Bridger Units 3 and 4 and Dave Johnston Unit 4
 - Wyoming Public Service Commission deliberations for the initial application are scheduled for November 29, 2022
- Final plan is required to be filed no later than March 31, 2023
 - PacifiCorp has requested an extension in order to complete the RFP process and the technical and financial analyses
 - RFP was issued on October 26, 2022

Washington Clean Energy Transformation Act (2019 WA. Laws SB 5116)



Overview:

- Created several state decarbonization policies, including:
- Eliminating coal-fired resources from Washington rates by the end of 2025;
- Requiring greenhouse gas-neutral retail electricity in Washington by 2030;
- Requiring carbon free retail electricity in Washington by 2045.

Timeline:

- May 2019 – CETA signed into law
- June 2019 through December 2021 – CETA Stakeholder discussions
- December 2021 – PacifiCorp files 2021 Clean Energy Implementation Plan
- June 2022 – WUTC Staff initiates Complaint on PacifiCorp's CEIP
- November 2022 – Settlement Reached in Complaint on PacifiCorp's CEIP
- December 2022 – Staff withdrawal of CEIP Complaint. CEIP docket currently in process. Expected resolution by March 2023.

Oregon Clean Energy Plan (HB 2021)



Overview:

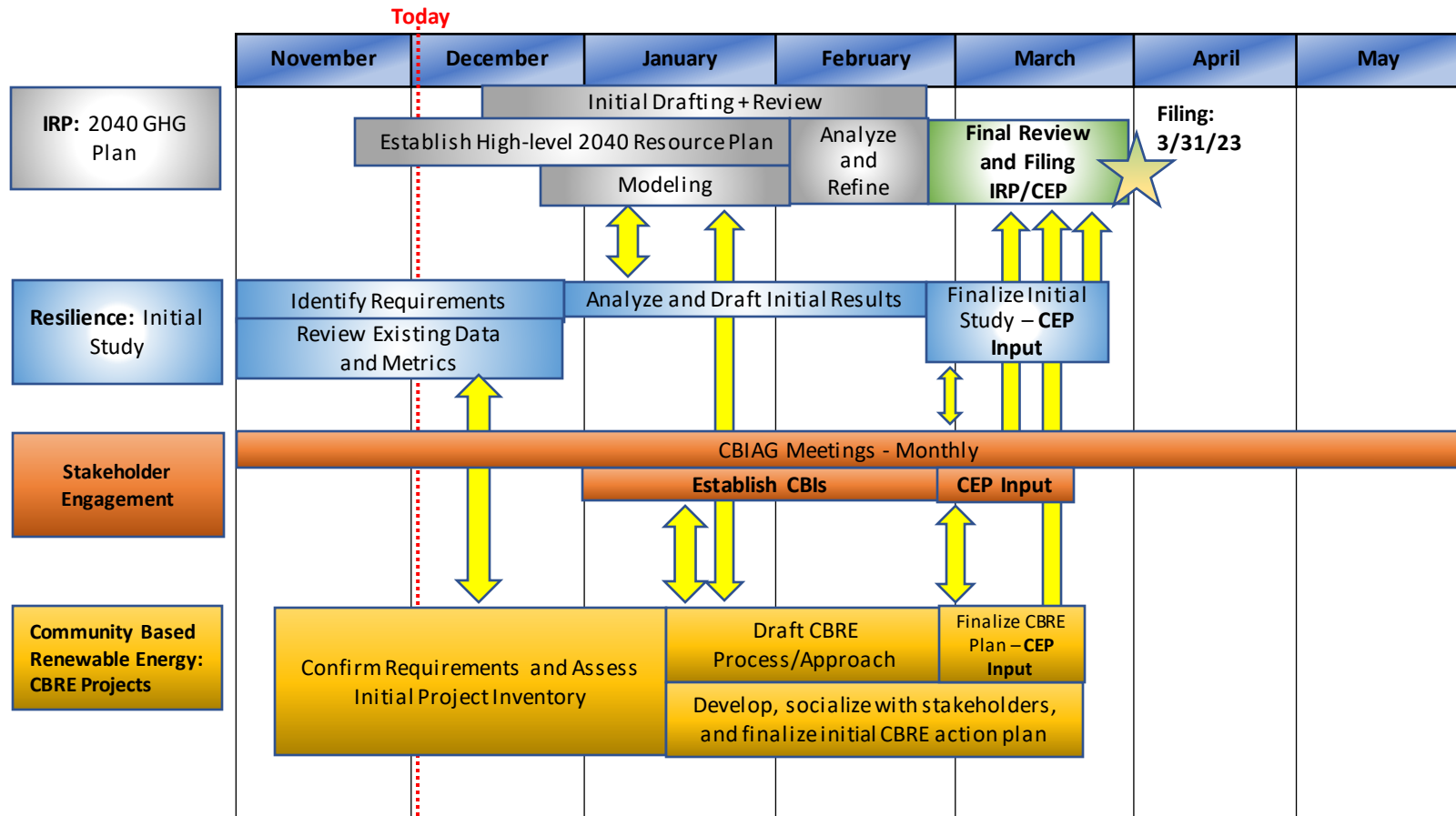
- Requires retail electricity providers to reduce GHG emission associated with electricity sold to Oregon consumers by:
 - 80% below baseline emissions levels by 2030;
 - 90% below baseline emissions levels by 2035; and
 - 100% below baseline emissions levels by 2040

Timeline:

- July 2021 – CEP signed into law, effective September 25, 2021
- January 2022 and on-going UM 2225 Staff's Investigation into CEP of a near-term focus on OPUC guidance for implementation
- March 2023 – PacifiCorp will file their first Clean Energy Plan with the IRP filing

In the January stakeholder meeting PacifiCorp will provide an update on its ongoing coordination between with Portland General Electric, Oregon Department of Environment Quality and Oregon Public Utility commission related to emissions analysis assumptions, reporting templates and communication protocols.

Oregon Clean Energy Plan High-level Roadmap



Community Benefits & Impacts Advisory Group (CBIAG)



Pacific Power has convened the CBIAG to focus on equity and a clean energy future in the state of Oregon in accordance with HB 2021

- PacifiCorp plans to continue seeking direct stakeholder feedback to build an inclusive and accessible process for consultation and collaboration. This includes:
- Increasing participation from communities that have not traditionally participated in utility planning processes.
- Providing the Company with a better understanding of community needs and perspectives.
- Identifying barriers to participation and input on how to address these barriers.
- Acting as a conduit to exchange information and ideas between the Company and stakeholder communities; and
- Assisting with community outreach.

Key Areas for Cross Utility Coordination



1.Coordinating on who is tapped for the CBIAG; each utility achieves a 'unique' footprint

2. Findings and learnings are shared to advance energy equity and an equitable clean energy future

3. Compensation and valuing CBIAG member contribution is the same



CBIAG	
Access Helps	Jackson
AllCare Health	Jackson and Josephine County
Capeco	East Central Oregon
Clatsop Community Action	Clatsop County
Coalicion Fortaleza	Rogue Valley
Community Energy Project	Portland
Ecumenical Ministries of Oregon	State wide
Josephine County Food Bank	Josephine County
Klamath & Lake Community Action Services	Klamath/Lake
Mid-Willamette Valley Community Action	Marion, Polk
Multnomah County	Multnomah
NeighborhoodImpact	Crook, Deschutes, Jefferson
Oregon Coast Community Action	Coos Bay
Rural Development Initiative	State wide
United Community Action Network	Roseburg

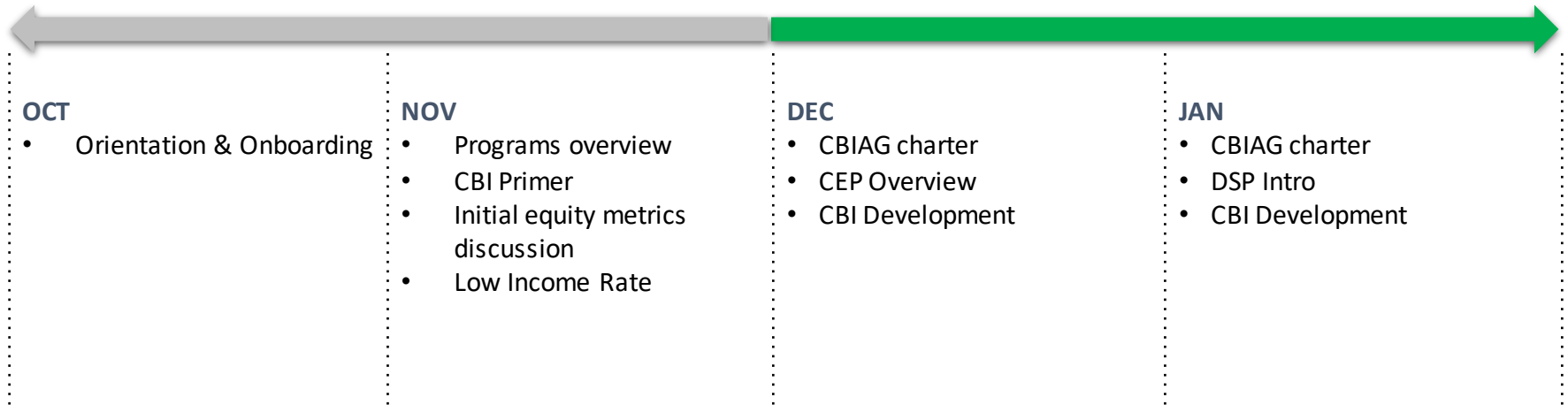
Past and Near Term CBIAG Topics and Meetings



Community needs & priorities

CBIAG charter development

Pacific Power programs and planning processes



FOR MORE INFORMATION

Oregon Clean Energy Plan Updated Engagement Strategy
[um2225hah161643.pdf \(state.or.us\)](#)

JOIN US FOR THE NEXT MEETINGS

[Oregon Community Benefits and Impacts Advisory Group
\(pacificorp.com\)](#)





Stakeholder Feedback



Stakeholder Feedback Form Update



- 27 stakeholder feedback forms submitted to date
- Stakeholder feedback forms and responses can be located at:
pacificorp.com/energy/integrated-resource-plan/comments
- Depending on the type and complexity of the stakeholder feedback, responses may be provided in a variety of ways including, but not limited to, a written response, a follow-up conversation, or incorporation into subsequent public-input meeting material
 - Generally, written responses are provided with the form and posted online at the link mentioned above
- Stakeholder feedback following the previous public input meetings is summarized on the following slides for reference

Summary – Recent Stakeholder Feedback Forms



Stakeholder	Date	Topic	Brief Summary*	Response*
Powder River Basin Resource Council	October 5, 2022	Natrium nuclear facility	Natrium project risk considerations, fuel availability and waste disposal	<u>Posted</u>
Sierra Club	October 16, 2022	Multiple Topics	Reliability resources, coal capacity factors, CCUS, load forecast adjustments, supply side resource adjustments, IRA, Jim Bridger fuel contract	<u>Posted</u>
Western Energy Storage Task Force	October 27, 2022	2023 Supply-Side Resources	Recommends specified forecast for utility-scale battery storage resources and proposed revising price modifications.	<u>Posted</u>
Sierra Club	November 18, 2022	Inflation Reduction Act	Relationship between IRA and load forecast assumptions	<u>Pending Review</u>
Utah Clean Energy	November 23, 2022	Lila Canyon Coal Mine fire	Risk and Ratepayer Assumptions resulting from damage to Lila Canyon	<u>Pending Review</u>

*Full comments and PacifiCorp's responses can be found online at <https://www.pacifiCorp.com/energy/integrated-resource-plan/comments.html>

Additional Stakeholder Updates



- On November 21, Western Resource Advocates submitted an inquiry on the impact of the Puget Sound Energy transfer of Colstrip units 3 & 4 to Talen Energy*.
 - Specifically, this request seeks to understand the implications for PacifiCorp and its ratepayers prior to 2025 and beyond.
 - Current PacifiCorp resource assumptions for Colstrip forecast a retirement date for units 3 & 4 no later than 2025.
 - PacifiCorp continues to monitor remediation risks and will follow rules consistent with State and Federal regulatory requirements.

* Submitted on behalf of Western Resource Advocates, Utah Clean Energy, Powder River Basin Resource Council, Renewable Northwest, and the Sierra Club.



Wrap-Up/Additional Information



Additional Information



- 2023 IRP Upcoming Public Input Meetings:
 - January 13-14, 2023 (Thursday-Friday)
 - February 23-24, 2023 (Thursday-Friday)
- Public Input Meeting and Workshop Presentation and Materials:
 - pacificorp.com/energy/integrated-resource-plan/public-input-process
- 2023 IRP Stakeholder Feedback Forms:
 - pacificorp.com/energy/integrated-resource-plan/comments
- IRP Email / Distribution List Contact Information:
 - IRP@PacifiCorp.com
- IRP Support and Studies:
 - pacificorp.com/energy/integrated-resource-plan/support