



In the Community to Serve®

Integrated Resource Plan Targeted Technical Advisory Group Meeting #4

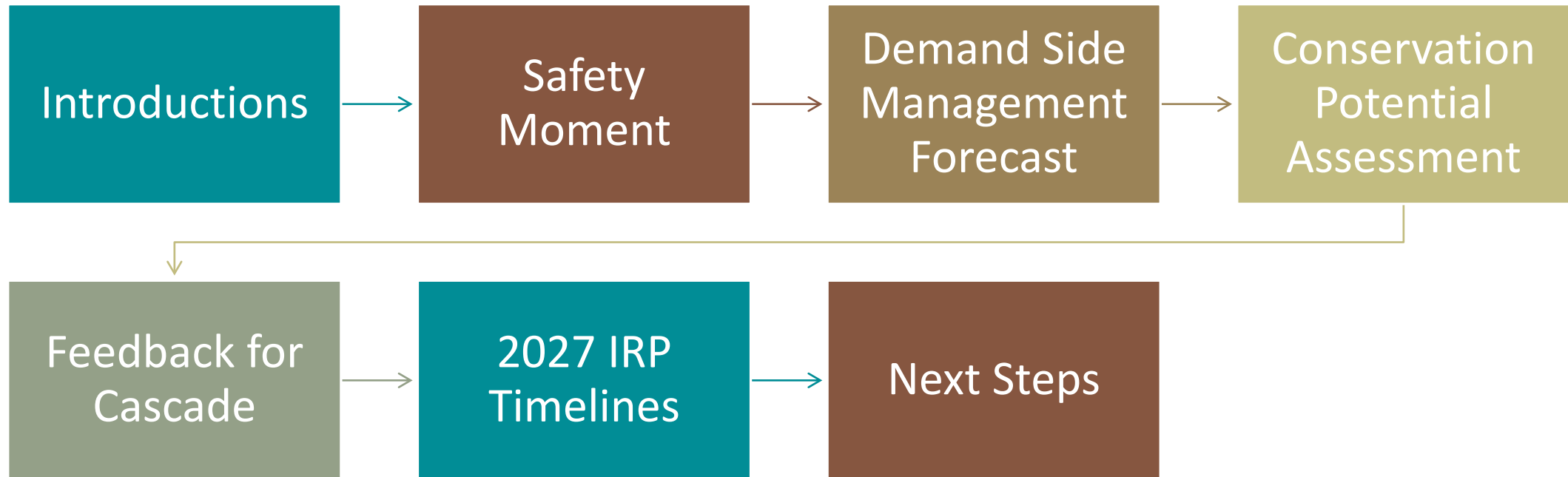
JULY 1, 2026

MICROSOFT TEAMS/TELECONFERENCE



In the Community to Serve®

Agenda



Safety Moment

Coping with Stress

Everyone reacts differently to stressful situations.
Here are just some ways that help to reduce or deal with stress:

- Take breaks from reading, watching, or listening to news stories, and social media.
- Take care of your mind and body:
 - Take deep breaths, meditate, or stretch.
 - Eat healthy, well-balanced meals.
 - Get plenty of sleep.
 - Take time to exercise regularly.
 - Avoid alcohol and drugs.
- Take time to unwind.
- Find and participate in some activities you enjoy.
- Connect with others by talking with people you trust about your concerns and share your feelings.



Demand Side Management

DSM Topics

Overview

- Program Performance
- Conservation Potential Assessment

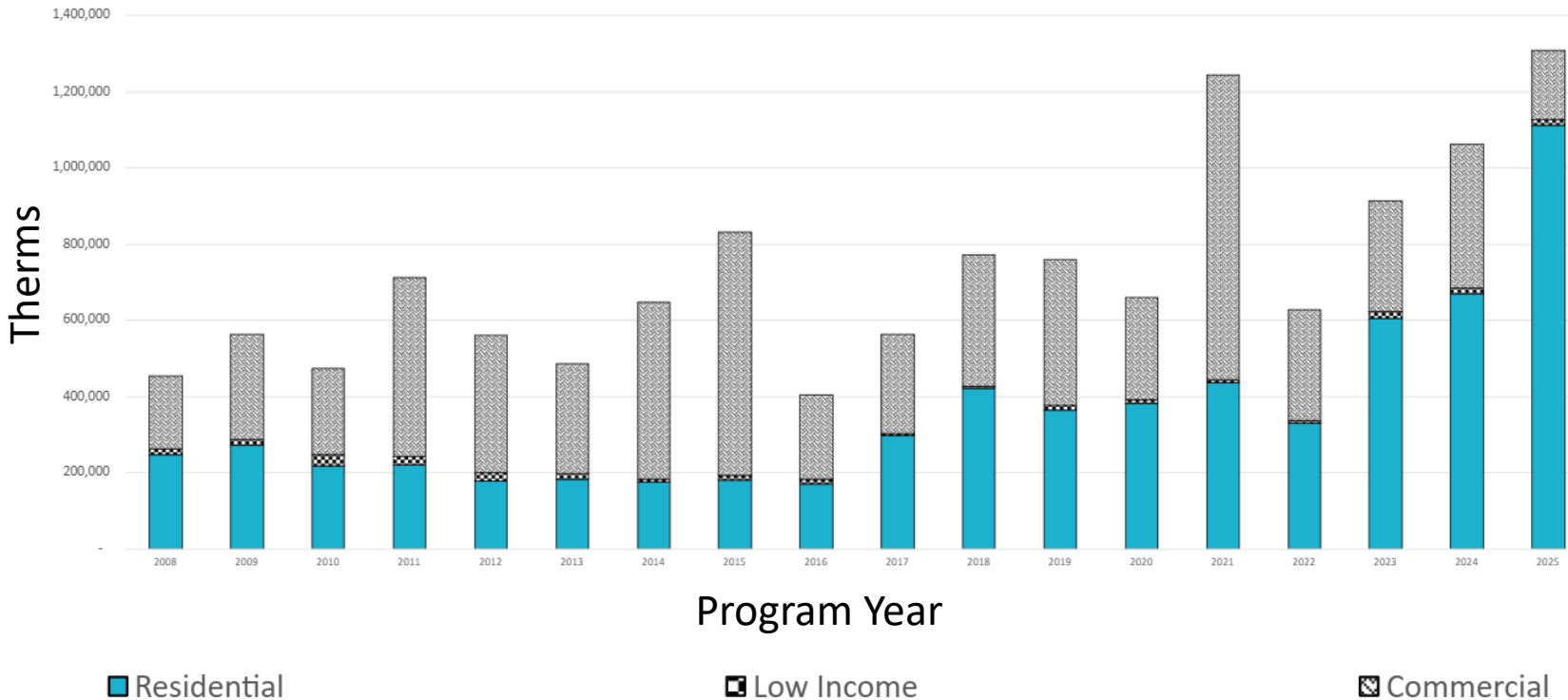
Energy Efficiency Forecast

Energy Efficiency Programs

- Commercial and Industrial
- Residential
- Portfolio

Overview

EE Annual Savings 2008 - Present



2025 Savings

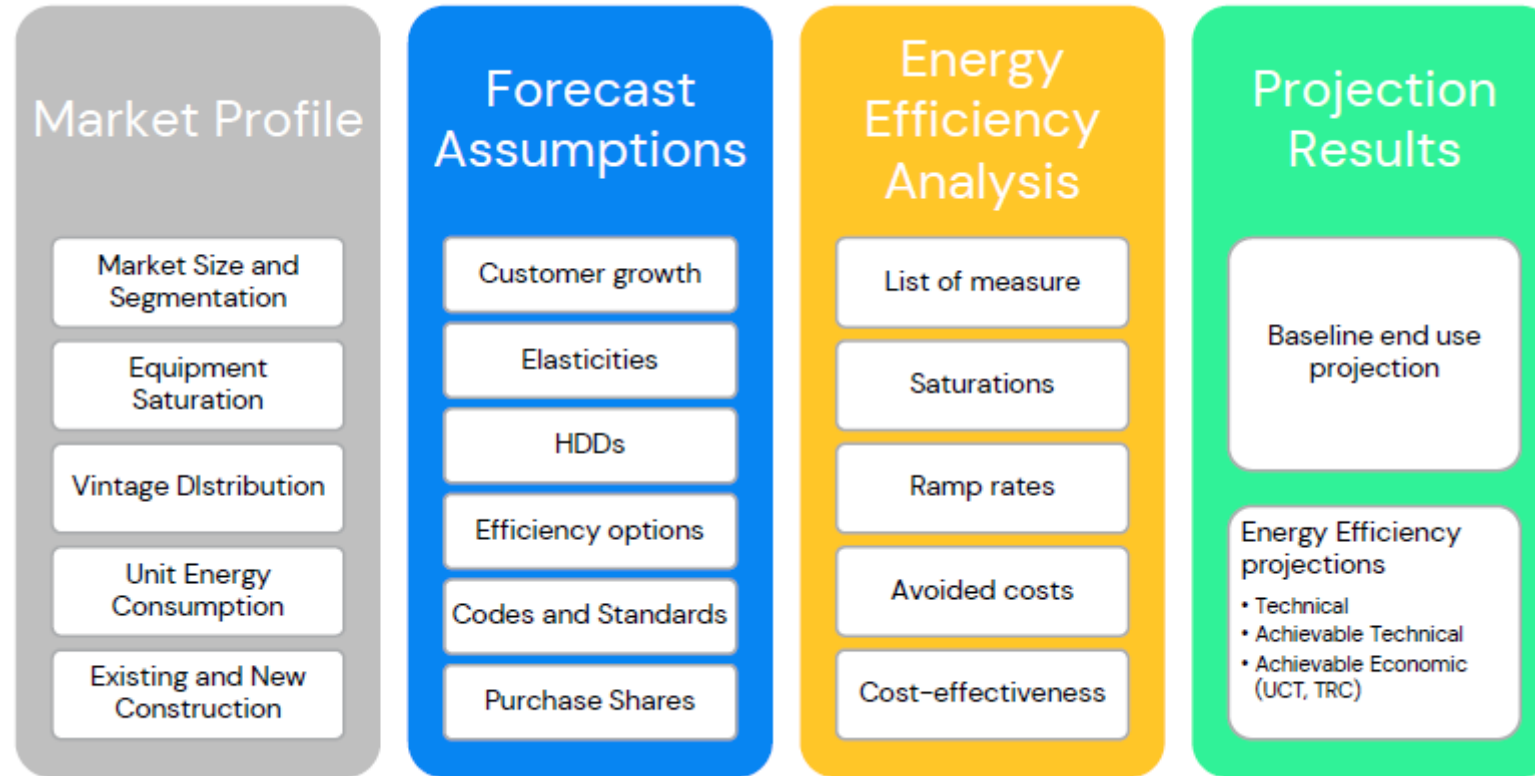
Program	Therm Savings
Residential	1,111,733
Commercial	181,789
Low-Income	16,294

2025: Residential energy savings record

- 66% more than 2024 Residential Savings
- Record Residential incentive dispersion– \$16.2 Million
- 192% of biennial residential therm savings goal met

Conservation Potential Assessment

VisionLoadMAP Analysis Framework





Recharacterized the base year of the model to be 2023 using the latest available data from Cascade as well as from regional and national secondary sources



Characterized more than 150 energy savings measures across three sectors comprising 25 market segments, using the best available data.

Calibrated the baseline projection of energy consumption by sector, segment, end use, and technology to 2023 actual customers and consumption, then continued the projection through 2045.



Estimated technical, achievable technical, and achievable economic energy savings at the measure level for 2026-2045. Achievable economic potential was assessed using the TRC test, however potential under the UCT screen was also evaluated for Cascade's planning benefit.



Data Inputs for the Measure Characteristics in VisionLoadMAP

Model Inputs	Description	Key Sources
Energy Impacts	The annual reduction in consumption attributable to each specific measure. Savings were developed as a percentage of the energy end use that the measure affects.	• Cascade program data • 2021 Power Plan workbooks • RTF • ICF BEST • IL TRM • EIA 2023 Reference case⁹ • Other secondary sources
Costs	Equipment Measures: Includes the full cost of purchasing and installing the equipment on a per-household, per-square-foot, or per employee basis for the residential, commercial, and industrial sectors, respectively. Non-Equipment Measures: Existing buildings – full installed cost. New Construction - the costs may be either the full cost of the measure, or as appropriate, it may be the incremental cost of upgrading from a standard level to a higher efficiency level.	• Cascade program data • 2021 Power Plan workbooks • RTF • AEO 2023 • EIA 2023 Reference case • CA DEER • RS Means • Other secondary sources
Measure Lifetimes	Estimates derived from the technical data and secondary data sources that support the measure demand and energy savings analysis.	• 2021 Power Plan workbooks • RTF • EIA 2023 Reference case • IL TRM • AEO 2023 • CA DEER • Other secondary sources
Applicability	Estimate of the percentage of dwellings in the residential sector, square feet in the commercial sector, or employees in the industrial sector where the measure is applicable and where it is technically feasible to implement.	• 2022 RBSA, 2014/2019 CBSA • 2020 RECS, 2018 CBECS • 2021 Power Plan applicability guidelines • 2021 WSEC and NEEA research for limitations on new construction • IL TRM • CA DEER • Other secondary sources
On Market and Off Market Availability	Expressed as years for equipment measures to reflect when equipment technology is available or no longer available in the market.	• ICF appliance standards and building codes analysis

Future Equipment Standards

Table 2-4: Residential Natural Gas Equipment Federal Standards

End Use	Technology	2023	2024	2025	2026	2027	2028	2029	2030
Space Heating	Furnace – Direct Fuel			AFUE 80%				AFUE 95%	
	Boiler – Direct Fuel				AFUE 84%				
Secondary Heating	Fireplace				N/A				
Water Heating	Water Heater ≤55 gal				UEF 0.58				
	Water Heater > 55 gal				UEF 0.76				
Appliances	Clothes Dryer			CEF 3.30				CEF 3.48	
	Stove/Oven				N/A			2028 Standard	
Miscellaneous	Pool Heater			TE 0.82				TE 0.84	
	Miscellaneous				N/A				

Table 2-5: Commercial and Industrial Natural Gas Equipment Standards

End Use	Technology	2023	2024	2025	2026	2027	2028	2029	2030
Space Heating	Furnace	AFUE 81% / TE 0.81							
	Boiler	Average around AFUE 90% / TE 0.90 (varies by size)							
	Unit Heater	Standard (intermittent ignition and power venting or automatic flue damper)							
Water Heating	Water Heater	TE 0.80							

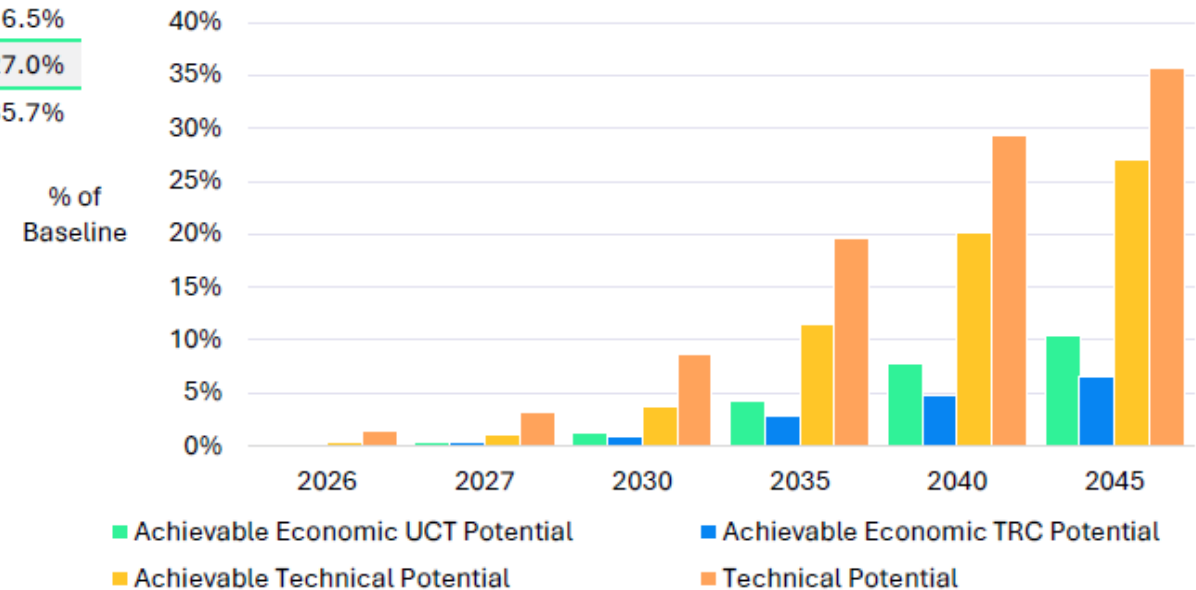
Portfolio

Portfolio Energy Efficiency Potential

Table 5-1: Summary of Energy Efficiency Potential (thousand therms)

Case	2026	2027	2030	2035	2040	2045
Baseline Projection (thousand therms)	248,263	248,562	247,251	243,538	241,620	241,225
Cumulative Savings (thousand therms)						
Achievable Economic UCT Potential	465	1,043	3,503	11,044	19,671	26,132
Achievable Economic TRC Potential	329	738	2,330	6,698	11,622	15,726
Achievable Technical Potential	1,124	2,559	9,061	27,940	48,840	65,061
Technical Potential	3,728	7,777	21,227	47,868	70,946	86,118
Cumulative Savings (% of Baseline)						
Achievable Economic UCT Potential	0.2%	0.4%	1.4%	4.5%	8.1%	10.8%
Achievable Economic TRC Potential	0.1%	0.3%	0.9%	2.8%	4.8%	6.5%
Achievable Technical Potential	0.5%	1.0%	3.7%	11.5%	20.2%	27.0%
Technical Potential	1.5%	3.1%	8.6%	19.7%	29.4%	35.7%

Figure 5-1: Summary of Energy Efficiency Potential as % of Baseline Projection

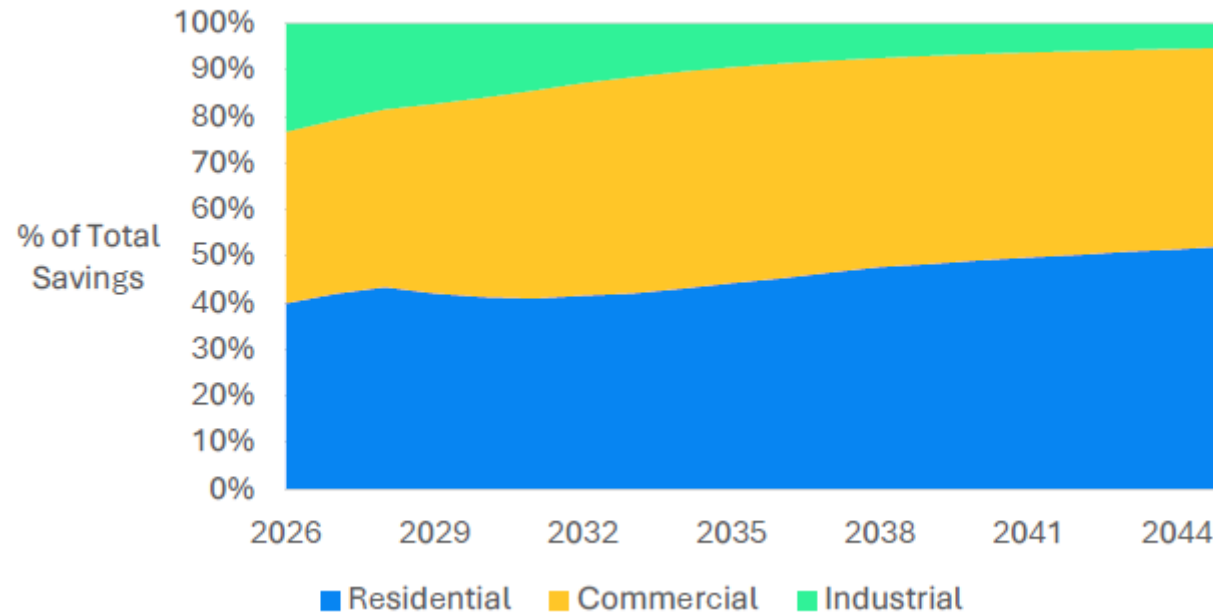


Residential

Energy Efficiency 2045

Cumulative UCT Achievable Potential Forecast

Figure 5-3: Cumulative Achievable Economic UCT Potential by Sector (% of Total)



Residential Forecast Summary

Table 6-1: Residential Energy Conservation Potential Summary (thousand therms)

Case	2026	2027	2030	2035	2040	2045
Baseline Forecast (thousand therms)	125,287	125,763	125,022	122,227	120,996	120,936
Cumulative Savings (thousand therms)						
Achievable Economic UCT Potential	209	485	1,572	5,141	10,029	14,125
Achievable Economic TRC Potential	97	237	699	2,103	4,247	6,468
Achievable Technical Potential	613	1,431	5,085	15,532	28,453	39,945
Technical Potential	2,395	4,958	12,819	27,568	42,246	53,624
Energy Savings (% of Baseline)						
Achievable Economic UCT Potential	0.2%	0.4%	1.3%	4.2%	8.3%	11.7%
Achievable Economic TRC Potential	0.1%	0.2%	0.6%	1.7%	3.5%	5.3%
Achievable Technical Potential	0.5%	1.1%	4.1%	12.7%	23.5%	33.0%
Technical Potential	1.9%	3.9%	10.3%	22.6%	34.9%	44.3%

Residential Top Ten Measures

Rank	Measure/Technology	2026 Cumulative Savings (thousand therms)	% of Total	2027 Cumulative Savings (thousand therms)	% of Total
1	Connected Thermostat - ENERGY STAR (1.0)	45.1	21.6%	97.7	20.2%
2	Insulation - Ceiling Upgrade	43.9	21.0%	90.7	18.7%
3	Furnace	28.0	13.4%	88.0	18.2%
4	Insulation - Ceiling Installation	21.6	10.3%	44.6	9.2%
5	Thermostat - Programmable	17.7	8.4%	38.3	7.9%
6	Clothes Washer - CEE Tier 2	15.5	7.4%	30.9	6.4%
7	Insulation - Wall Cavity Installation	9.0	4.3%	18.6	3.8%
8	Windows - High Efficiency (ENERGY STAR 7.0)	5.8	2.8%	17.6	3.6%
9	Insulation - Basement Sidewall	7.8	3.7%	16.1	3.3%
10	Ducting - Repair and Sealing	6.0	2.9%	15.5	3.2%

Commercial & Industrial

Commercial Forecast Summary

Table 6-4: Commercial Energy Conservation Potential Summary

Case	2026	2027	2030	2035	2040	2045
Baseline Forecast (thousand therms)	98,749	98,473	98,187	96,164	94,940	94,059
Cumulative Savings (thousand therms)						
Achievable Economic UCT Potential	157	359	625	4,913	8,398	10,701
Achievable Economic TRC Potential	136	308	528	3,747	6,377	8,225
Achievable Technical Potential	377	855	1,475	10,919	18,347	22,800
Technical Potential	1,122	2,397	3,852	18,261	26,050	29,609
Energy Savings (% of Baseline)						
Achievable Economic UCT Potential	0.2%	0.4%	0.6%	5.1%	8.8%	11.4%
Achievable Economic TRC Potential	0.1%	0.3%	0.5%	3.9%	6.7%	8.7%
Achievable Technical Potential	0.4%	0.9%	1.5%	11.4%	19.3%	24.2%
Technical Potential	1.1%	2.4%	3.9%	19.0%	27.4%	31.5%

Commercial Top Ten Measures

Rank	Measure / Technology	2026 Cumulative Potential Savings (thousand therms)	% of Total	2027 Cumulative Potential Savings (thousand therms)	% of Total
1	Insulation - Ceiling	30.2	19.3%	66.9	18.7%
2	Retrocommissioning	19.9	12.7%	39.6	11.0%
3	Gas Boiler - Hot Water Reset	17.5	11.1%	38.7	10.8%
4	Boiler - TE 98%	13.0	8.3%	33.3	9.3%
5	Thermostat - Programmable	13.3	8.5%	29.5	8.2%
6	Water Heater - Pre-Rinse Spray Valve	10.8	6.9%	21.5	6.0%
7	Insulation - Wall Cavity	7.0	4.5%	17.9	5.0%
8	Gas Boiler - Insulate Steam Lines/Condensate Tank	7.5	4.8%	16.6	4.6%
9	Commercial Laundry - Dryer Efficiency Retrofit	5.9	3.7%	13.1	3.6%
10	Gas Boiler - Burner Control Optimization	5.8	3.7%	12.8	3.6%

Industrial Forecast Summary

Table 6-6: Industrial Energy Conservation Potential Summary (thousand therms)

Case	2026	2027	2030	2035	2040	2045
Baseline Forecast (thousand therms)	24,226	24,325	24,626	25,147	25,684	26,230
Cumulative Savings (thousand therms)						
Achievable Economic UCT Potential	99	199	523	990	1,245	1,306
Achievable Economic TRC Potential	97	194	493	848	999	1,033
Achievable Technical Potential	135	273	734	1,489	2,040	2,316
Technical Potential	211	421	1,076	2,038	2,649	2,885
Energy Savings (% of Baseline)						
Achievable Economic UCT Potential	0.4%	0.8%	2.1%	3.9%	4.8%	5.0%
Achievable Economic TRC Potential	0.4%	0.8%	2.0%	3.4%	3.9%	3.9%
Achievable Technical Potential	0.6%	1.1%	3.0%	5.9%	7.9%	8.8%
Technical Potential	0.9%	1.7%	4.4%	8.1%	10.3%	11.0%

Industrial Top Ten Measures

Rank	Measure / Technology	2026 Cumulative Potential Savings (thousand therms)	% of Total	2027 Cumulative Potential Savings (thousand therms)	% of Total
1	Process - Heat Recovery	61.7	62.4%	123.4	61.9%
2	Strategic Energy Management	10.1	10.2%	20.3	10.2%
3	Retrocommissioning	9.2	9.3%	18.2	9.1%
4	Process Boiler - Stack Economizer	3.5	3.6%	7.0	3.5%
5	Gas Boiler - Stack Economizer	2.5	2.6%	5.0	2.5%
6	Process Boiler - High Turndown Burner	1.7	1.8%	3.5	1.7%
7	Gas Boiler - Insulate Steam Lines/Condensate Tank	1.5	1.5%	3.2	1.6%
8	Process Boiler - Insulate Steam Lines/Condensate Tank	1.5	1.5%	2.9	1.5%
9	Thermostat - Programmable	1.4	1.4%	2.7	1.4%
10	Process Boiler - Insulate Hot Water Lines	1.3	1.3%	2.6	1.3%

Energy Trust of Oregon: Energy Efficiency

New Initiative 2026-2027

- Low-Income Energy Efficiency Program Offerings
- Targeted Energy Efficiency Load Management Opportunity Development
- Accessibility
 - Website Translation
 - Incentive Information Revision

Ongoing

- Integrated Resource Plan (IRP) Forecasting for Energy Efficiency Deployment
- EE Event and Outreach Coordination
- Marketing Campaign Coordination on EE Awareness Efforts and Measure-Specific Campaigns.
- Dual Fuel Heat Pump Pilot Program Evaluation

Feedback for Cascade?

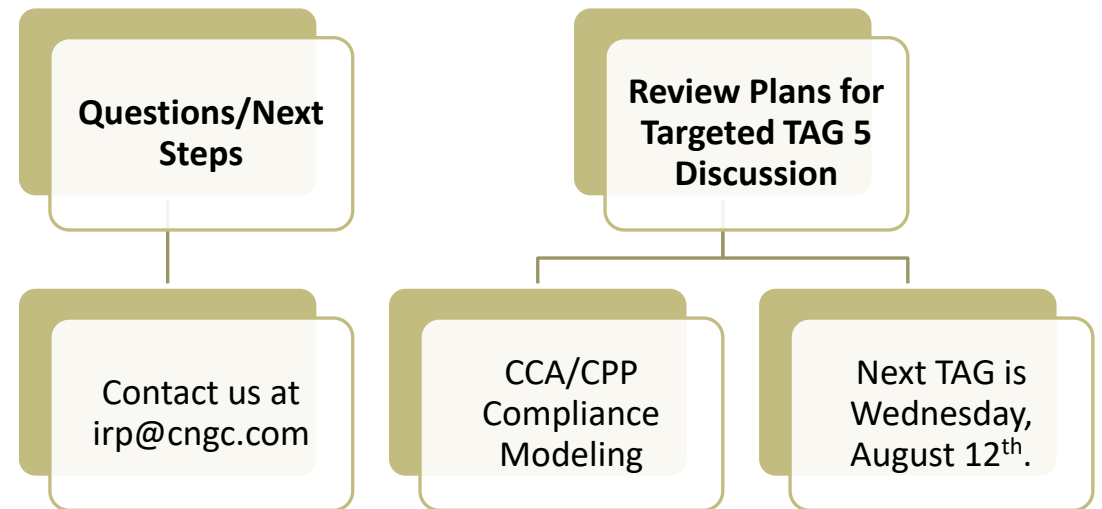
Any other changes or ideas that Cascade should consider for Energy Efficiency Modeling?

Process Item	Date	Process Element
Targeted-TAG	Wednesday, August 12, 2026	CCA/CPP Compliance Modeling
Targeted-TAG	Wednesday, September 2, 2026	Distribution System Planning
Targeted-TAG	Wednesday, September 23, 2026	Resource Integration
TAG 1	Wednesday, October 14, 2026	Process, Key Points, IRP Team, Timeline, Regional Market Outlook, Planned Scenarios and Sensitivities, Stakeholder Engagement, Demand and Customer Forecast and Non-Core Outlook, Drilling down into segments of demand forecast. Upstream Pipeline presentation.
TAG 2	Wednesday, November 18, 2026	Respond to TAG 1 Feedback, Distribution System Planning, Alternative Resources, Price Forecast, Avoided Costs, Current Supply Resources, Transport Issues, Carbon Impacts, Energy Efficiency, Bio-Natural Gas, Preliminary Resource Integration Results.
First Draft	Wednesday, December 16, 2026	
Comments Due	Wednesday, January 20, 2027	
TAG 3	Wednesday, February 10, 2027	Respond to TAG 2 feedback, Final Integration Results, finalization of plan components, Proposed new 2- to 4-year Action Plan
Final Draft	Friday, March 12, 2027	
Comments Due	Friday, April 9, 2027	
TAG 4 (if needed)	Wednesday, April 28, 2027	
Final Complete By	Wednesday, May 19, 2027	
File	Friday, May 21, 2027	

2027 IRP Schedule



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