

2026 IRP LOAD FORECAST BRIEFING

OPALCO

Board Meeting

May 2026

IRP Agenda and Sequence

- May - Load Forecast, part 1
- Forthcoming IRP Board Topics
 - Load Forecast, part 2
 - Evolving load profile - hourly, day/night, annual
 - Solutions - mainland versus local
 - Financial implications - co-op and members
 - Reliability - load shedding, adapting and evolving

May - Load Forecast Agenda

- Long Range Planning Strategy
- Regional Context

Long Range Planning Strategy

Helping members prepare

o Acknowledgements

- § Major NW energy supply/demand shortfalls are coming, especially in winter
- § Expect notable power cost increases and reliability issues
- § Limitations of current Fed, State and Local grant funding opportunities
- § In lieu of fire insurance availability, increase ROW clearance to mitigate wildfire risk
- § Maintaining OPALCO's grid is costly (especially while planning to replace 25 submarine cables overtime)
- § Current planned renewable generation projects are community solar subscriber funded (e.g. Decatur and Bailer Hill)

o Utilize PNGC and BPA (TIER 1 and TIER 2) to solve mainland power shortfalls

- § For the next 5 years, OPALCO's contract with BPA will remain load following
- § PNGC may be able to assist with filling TIER 2 power shortfall gaps cheaper than BPA over the long-term

o Work with San Juan County to update local permitting process

- § Land-use tables - streamline local renewable permitting, evolve from old fossil fuel generation model
- § "Essential Public Utilities" language update in the Uniform Development Code

o In the interim, before grants become available again, concentrate on providing local member tools and solutions to help navigate through short-term reliability issues (e.g. use Switch-It-Up and OPALCO self-funding for members to install energy storage and back up generation solutions).

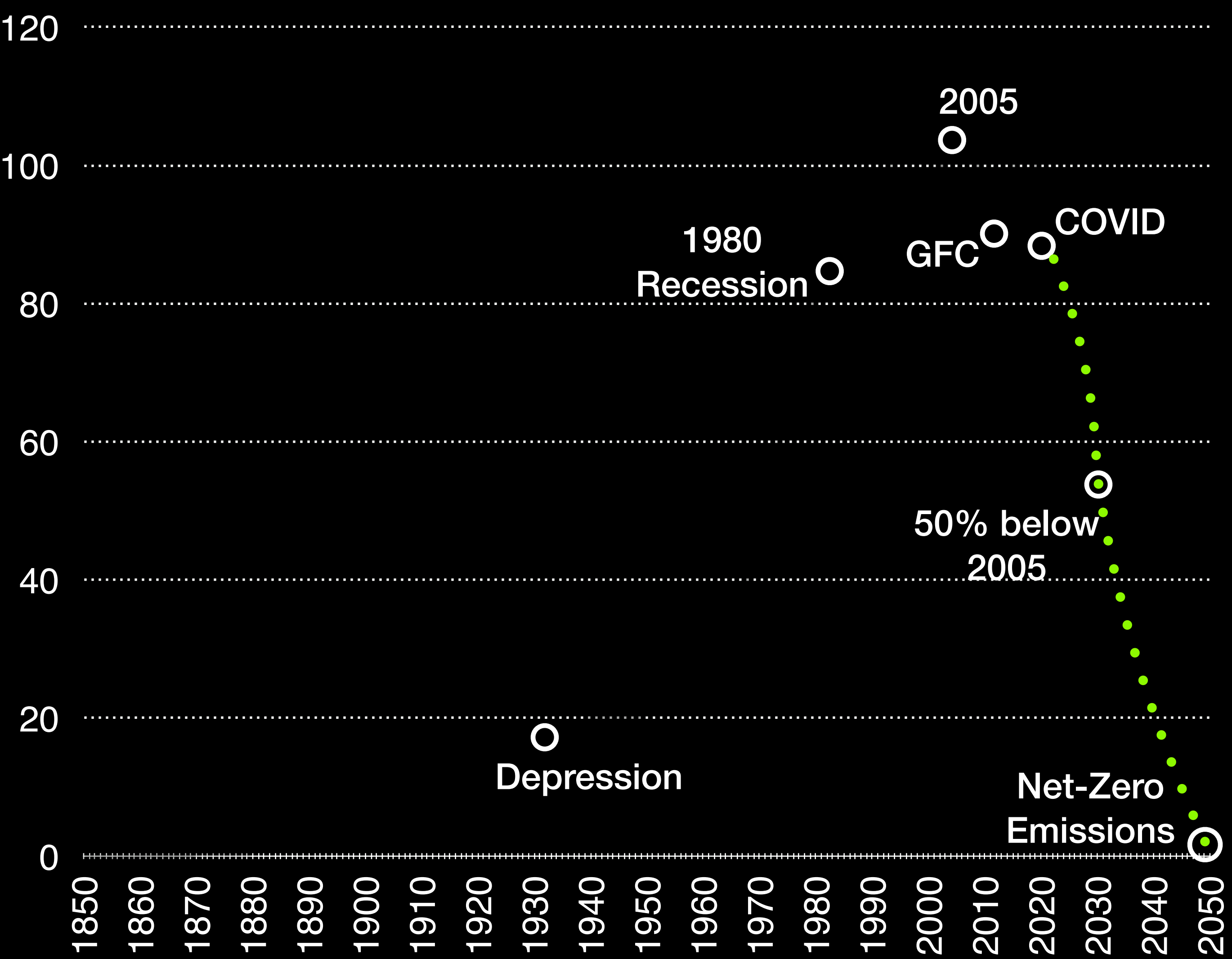
- § Submit multiple member relending RESP loan fund requests to RUS (Switch-It Up funds) for members to navigate short term reliability issues
- § Explore OPALCO funded backup system programs (i.e. back-up generation and storage systems)

o Be able to rapidly scale renewable energy projects once grant funds become available.

- § Land: Establish renewable energy non-profit to reach out to members to procure renewable generations sites (with tax advantages similar to Land Bank model).
- § Work with county to develop a renewable energy trust similar to Land Bank model.
- § Grants (& small amount of OPALCO funds) to support capital investment portion.

Context

WA Annual CO₂ Emissions: 1850 - 2050 (Million Metric Tons - MMT)



“Not even close!”

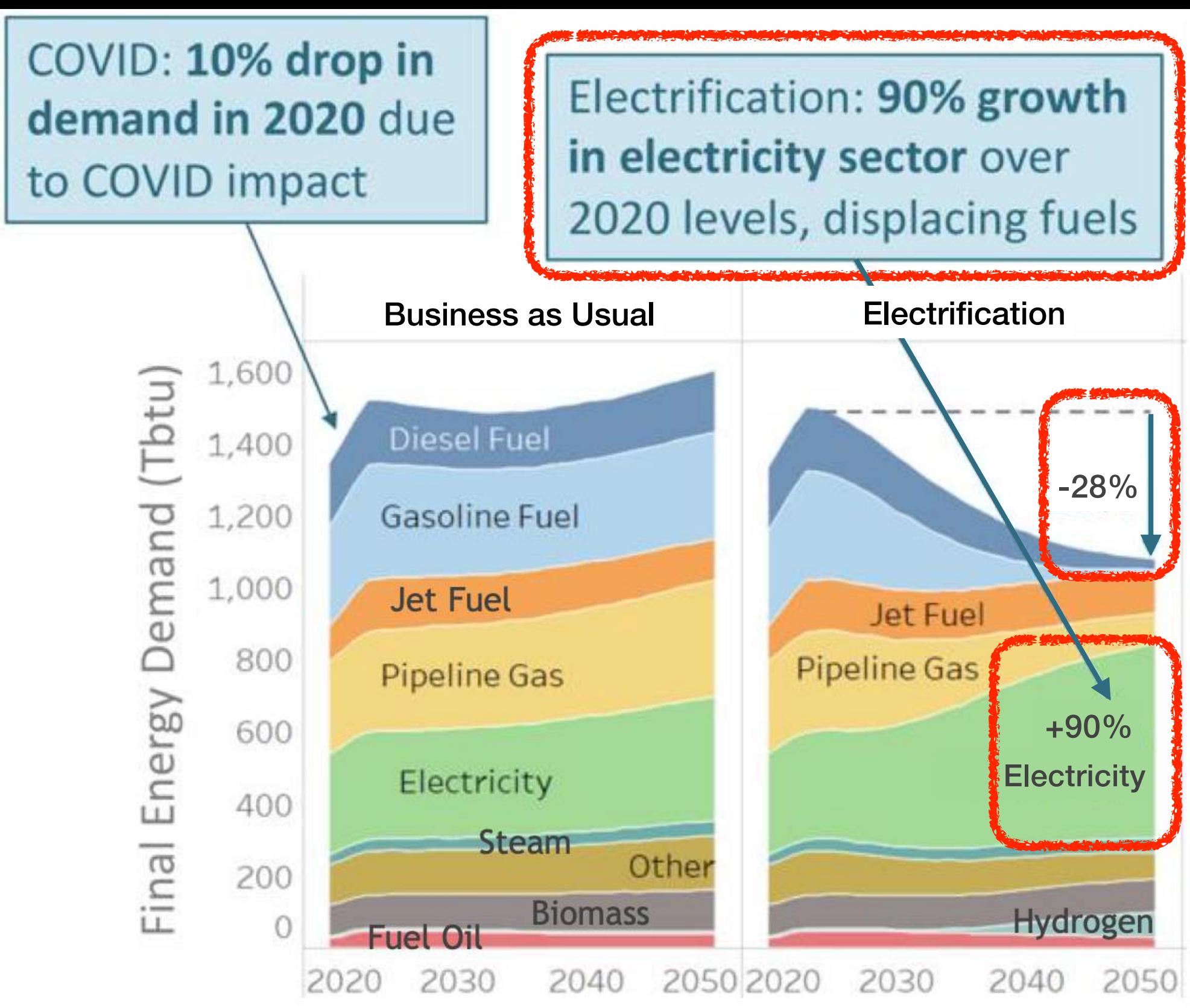
Washington Objectives

- reduce GHG emissions 50% below 2005 levels by 2030, Net-Zero by 2050
- invest in infrastructure, renewables + storage, resilience, electrify transportation (cars, trucks, ferries, planes)
- delivering 40% of the benefits to disadvantaged communities
- increase clean-tech jobs
- substantial funds from WA departments of Commerce and Transportation

WA CETA & 2021 Energy Strategy Implications

Decarbonization will reduce TOTAL energy consumption by 28%, by nearly doubling demand for electricity

“CCA penalties!”



Energy Megatrends to Decarbonize Energy Supply

- ❖ Climate change → Decarbonization → Electrification Transportation and Heating
- ❖ Electric capacity decreasing dramatically 2025 coal plant shut down, hydro spill
- ❖ Solar and wind generation will be deployed to meet demand, but slowly
- ❖ California power play - NW hydro needed to stabilize intermittent solar and wind

If California was a country, it would be the fifth largest economy in the world!

Major Challenges Ahead

- ❖ Millions of acres of land will be required for solar, wind and transmission corridors
- ❖ Permitting/siting/acquiring new land resources will take years and capital - NIMBY
- ❖ Federal and State financial assistance will be needed to meet capital requirements

WA has funding, powered by Climate Commitment Act (CCA)

News release: May 19, 2026

Commerce awards more than \$60 million for clean energy and grid resilience projects statewide

Investments support solar, battery storage, grid upgrades and predevelopment planning in 32 counties

OLYMPIA, Wash. --- Nearly 100 clean energy projects across Washington are closer to reality thanks to a \$60.4 million investment from the Washington State Department of Commerce. Many of the projects, located in 33 of Washington's 39 counties, will be online soon to reduce emissions and help lower energy bills.

"These investments demonstrate Commerce's commitment to moving projects quickly from concept to construction," said Commerce Interim Director Sarah Clifthorne. "I'm excited we're helping neighborhoods become more resilient and helping make clean energy more affordable"

The 96 new awards are in addition to \$16.8 million for [tribal clean energy awards announced in April](#). In total, Commerce has invested \$77.2 million in 118 community clean energy projects this spring.

The new awards are from several Commerce programs: Clean Energy Grants, Clean Energy Siting and Permitting, Thermal Energy Networks, Clean Energy Technical Assistance, and the Washington Grid Resilience Program.

Clean Energy Grants

Clean Energy Siting and Permitting

Thermal Energy Networks

Clean Energy Technical Assistance

Washington Grid Resilience Program

E3 April 2026 Study: Resource Adequacy and the Energy Transition in the Pacific Northwest

“Electric supply/demand shortfall is growing faster than new renewable energy supply”

Resource Adequacy and the Energy Transition in the Pacific Northwest

Final Report

April 2026



Energy+Environmental Economics

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“Higher demand along with the potential for drier-than-normal weather conditions from the El Niño weather pattern is placing the Pacific Northwest at elevated risk of blackouts this summer. The region gets 55% of its generation from hydropower.” **NERC**

Accelerated load growth and continued retirements create a supply/demand shortfall of 9 GW of effective capacity by 2030 and 14–18 GW by 2035

- The region faces a multi-day reliability challenge driven by cold snaps and low hydro conditions.
- Most shortfall events occur during the cold winter months, when demand spikes while wind and solar produce less.
- Simulated reliability events can last multiple days, exceeding 50–100 hours.

E3 April 2026 Study: Resource Adequacy and the Energy Transition in the Pacific Northwest

E3 ELCC Analysis

WECC 2029 NW Assessment

Northwest - 2029		Months											
Existing + Tier 1		1	2	3	4	5	6	7	8	9	10	11	12
0	2	0	0	0	0	0	0	0	0	0	0	0	0
1	2	0	0	0	0	0	0	0	0	0	0	0	0
2	4	0	0	0	0	0	0	0	0	0	0	0	0
3	4	0	0	0	0	0	0	0	0	0	0	0	0
4	4	0	0	0	0	0	0	0	0	0	0	0	0
5	2	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	1
7	2	0	0	0	0	0	0	0	0	0	0	0	4
8	3	0	0	0	0	0	0	0	0	0	0	0	2
9	3	0	0	0	0	0	0	0	0	0	0	0	0
10	3	0	0	0	0	0	0	0	0	0	0	0	0
11	4	0	0	0	0	0	0	0	0	0	0	0	0
12	4	0	0	0	0	0	0	0	0	0	0	0	0
13	3	0	0	0	0	0	0	0	1	0	0	0	0
14	2	0	0	0	0	0	0	0	2	0	0	0	0
15	1	0	0	0	0	0	0	0	2	0	0	0	0
16	4	0	0	0	0	0	0	1	2	0	0	0	0
17	5	0	0	0	0	0	0	1	2	0	0	0	2
18	4	0	0	0	0	0	0	0	3	0	0	0	2
19	4	0	0	0	0	0	0	0	2	0	0	0	1
20	2	0	0	0	0	0	0	0	1	0	0	0	1
21	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0

Greater Northwest region faces a resource shortfall in 2026 and beyond

Greater Northwest Load and Resource Balance

Effective Capacity (ELCC) MW

	2025	2026	2027	2028	2029	2030
Total Resource Need*	49,245	50,737	52,499	54,184	55,879	57,195
Existing Portfolio w/ Retirements	46,716	45,666	45,395	45,388	45,098	44,757
Firm Imports	3,750	3,750	3,750	3,750	3,750	3,750
Reliability Position Surplus (+) / Shortfall (-)	+1,221	-1,321	-3,354	-5,046	-7,031	-8,689
ELCC from "In-Development"*** Firm Resources	-	296	407	580	770	1,114
ELCC from "In-Development" Wind, Solar and Battery projects	-	645	1,015	1,316	1,508	1,934

Available resources includes firm imports from other regions

The region faces a power supply shortfall starting in 2026 that grows to almost 9 GW by 2030

In development resources amount to only 3 GW of effective capacity, leaving 6 GW shortfall

* Total Resource Need includes median peak load + 9% PCAP planning reserve margin as well as obligation to serve the Columbia River Treaty Regime
 ** In-development resources are based on WECC ADS 2034 facilities with confirmed project location, project name, or can be verified online
 *** Centralia unit 2's repower from coal to gas was not in the WECC ADS data source and is not included here; it would bring down the shortfall by ~700 MW in 2029 and 2030

Why ELCC Matters

The NW reliability problem isn't nameplate capacity — it's firm energy over multi-day cold snaps. The region's biggest reliability challenge is a multi-day cold weather event during a low hydro year, where reliability events can last more than 50–100 hours. Wind, Solar, and a 4-hour battery has a low ELCC precisely because it can't cover that. Hydro, thermal and natural gas have ELCC near 100%. Solar, Wind and battery about about 6% to 20%, especially during cold snap high pressure events (windless, low solar, up to two weeks).

OPALCO Must Ensure Reliable Delivery of Power to all Members

Duty to Advise

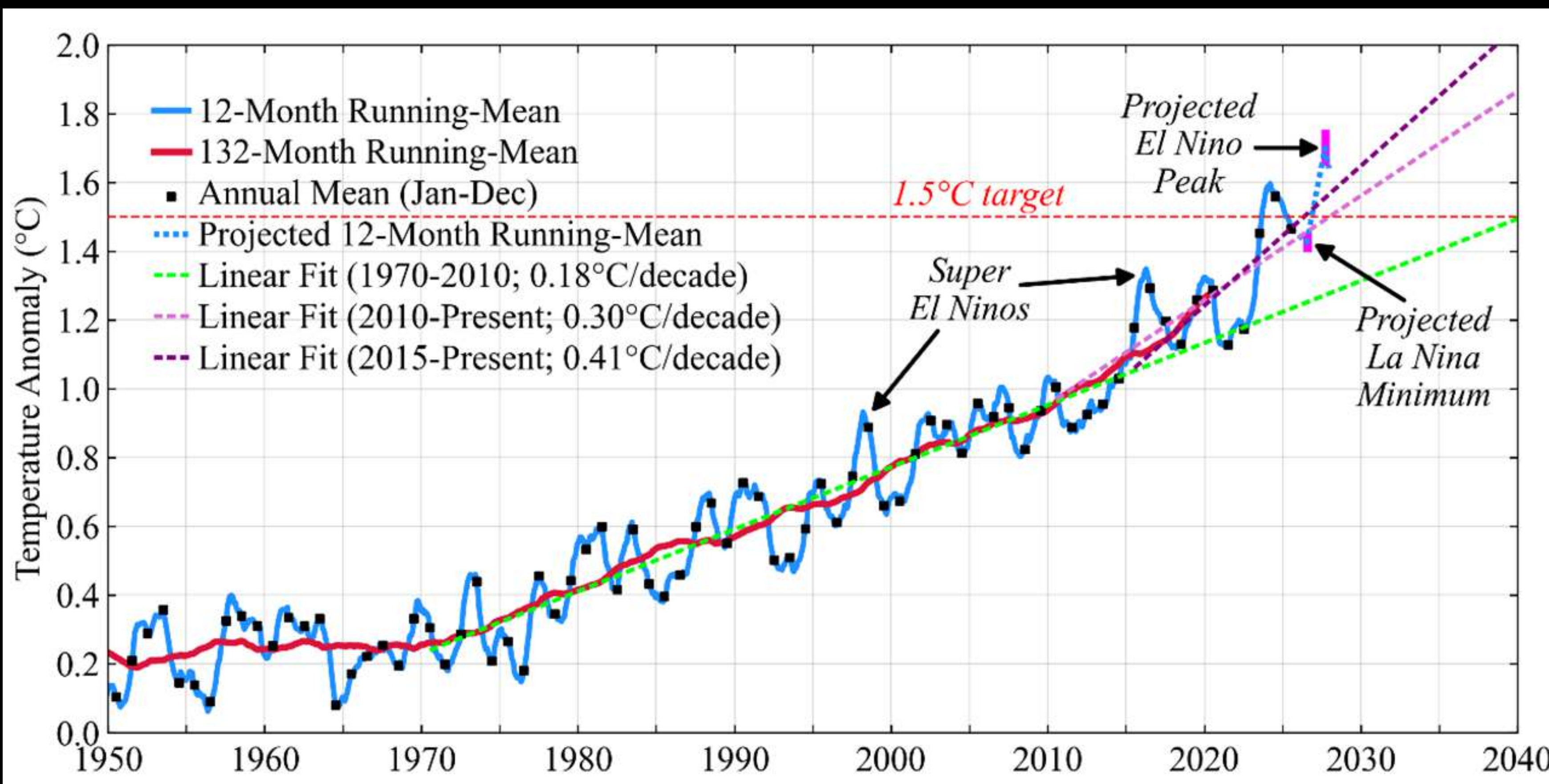
- Mainland electric load is exceeding supply
Shortfall starts this year, growing to over 14-18 GW deficit by 2035
- Outages and price shocks are imminent
2024 January cold snap - grid almost collapsed, 800%+ wholesale price spike
- There is no new hydro, it is declining with climate change
- New mainland renewables projects will take decades to deploy
Northwest needs to be adding 2.5 GW per year – 25X faster than normal
- Deficit mainly due to legal and permitting barriers that have historically slowed development to 125 MW per year

Global Surface Temperature Change (relative to 1880-1920 base period)

*The need for renewables
is accelerating*

Notes

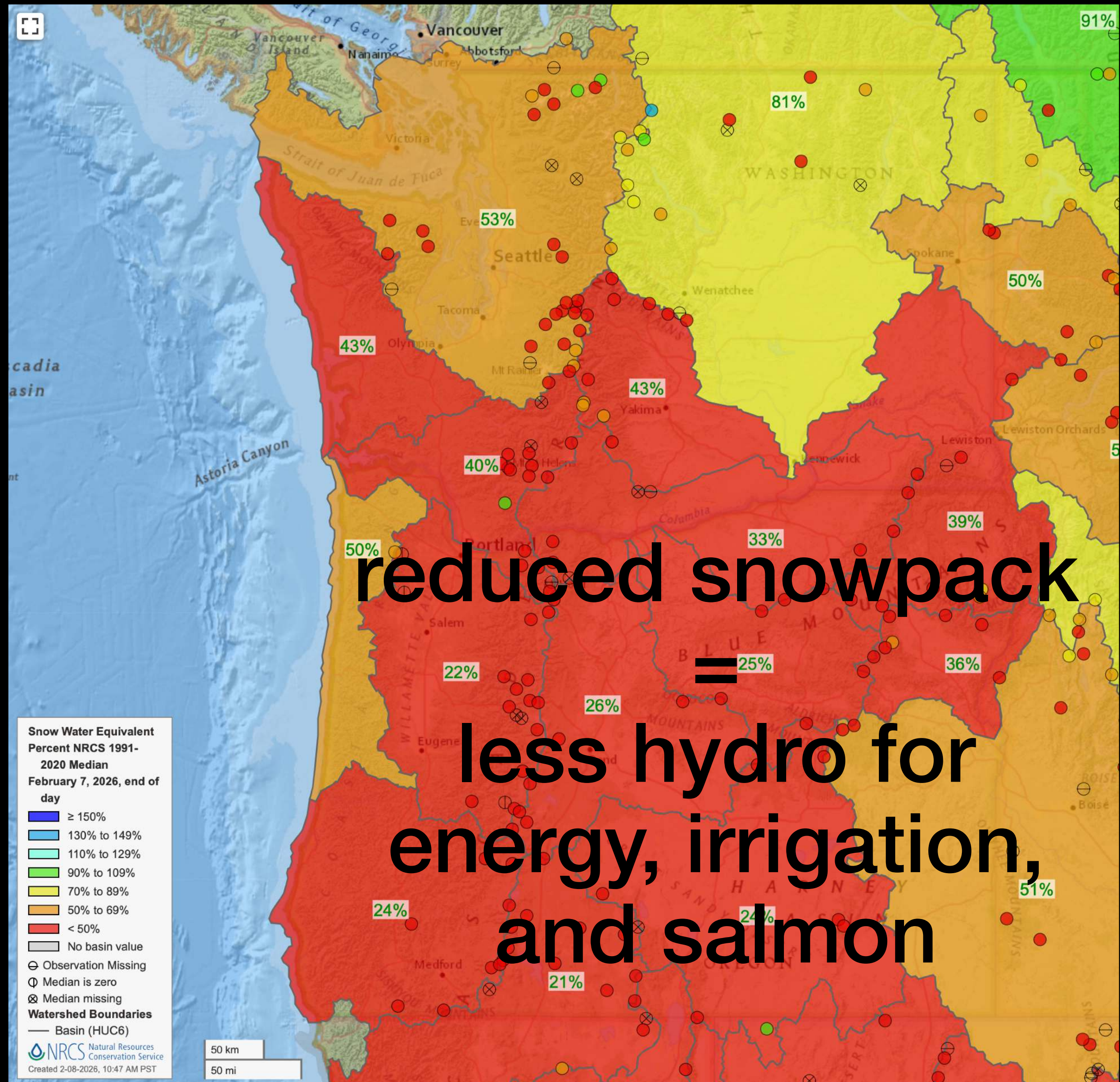
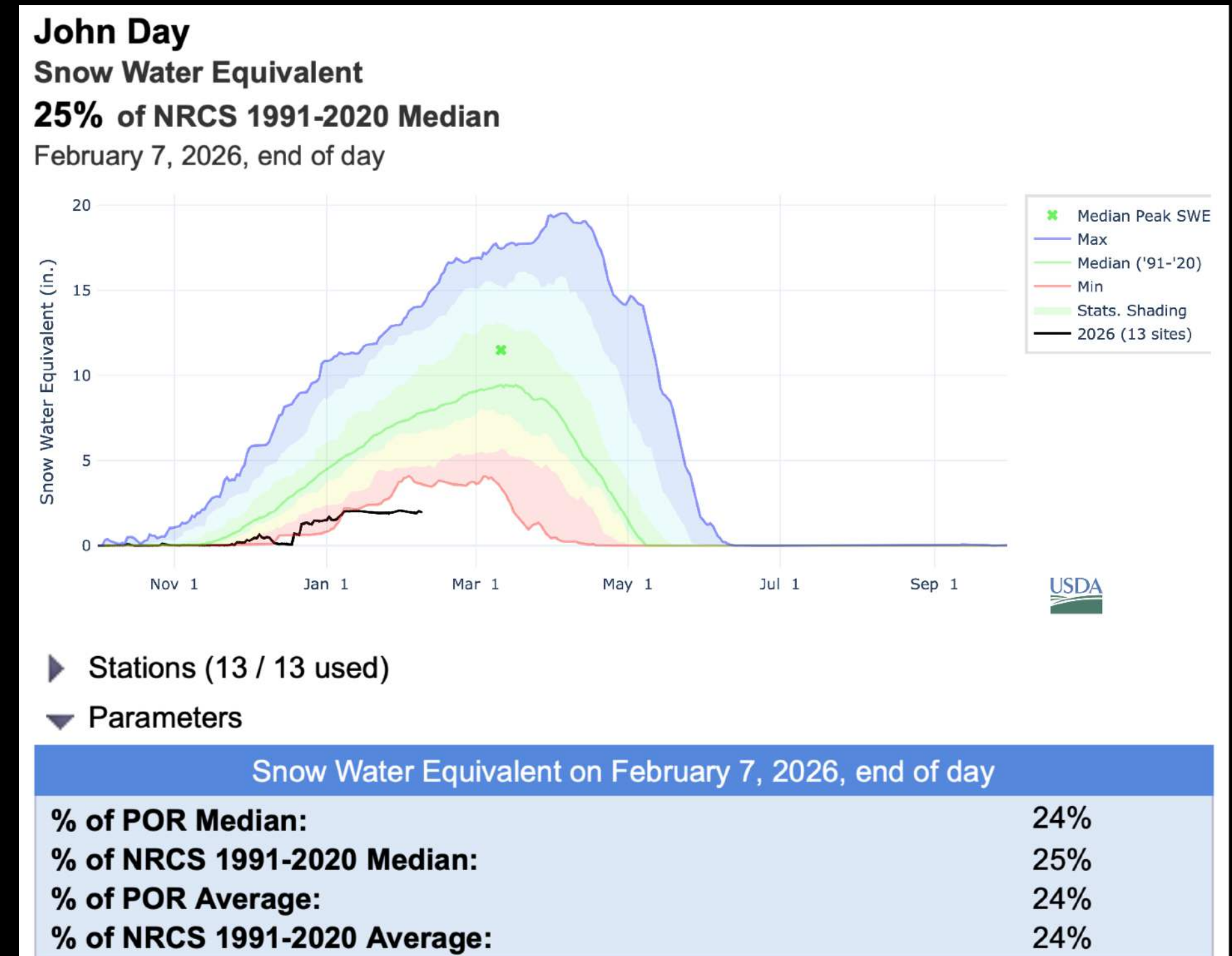
- Increased wildfire risk
- Reduce snowpack and low water year hydro capacity
- Increased heat domes which can spike mainland market power rates and loss of load probability (LoLP)



Snow Water Equivalent Snapshot: 7 February 2026

- Northwest River Forecast Center (NWRFC) and NRCS basin maps show a **significant "snow drought" across much of the region**
- **Washington** Approximately 82% of stations are in a snow drought. Statewide snow water equivalent (SWE) is hovering around 62% of the median, which marks this as **one of the worst snow years since 1985**.
- **Oregon** Conditions are even more severe, with 86% of stations in snow drought. Many basins are reporting just 35% of the median SWE, **trending toward record lows for early February**.

**reduced snowpack
= 25%
less hydro for
energy, irrigation,
and salmon**



Supply-Demand Shortfall: Mid-Columbia Price History (\$/MWh)

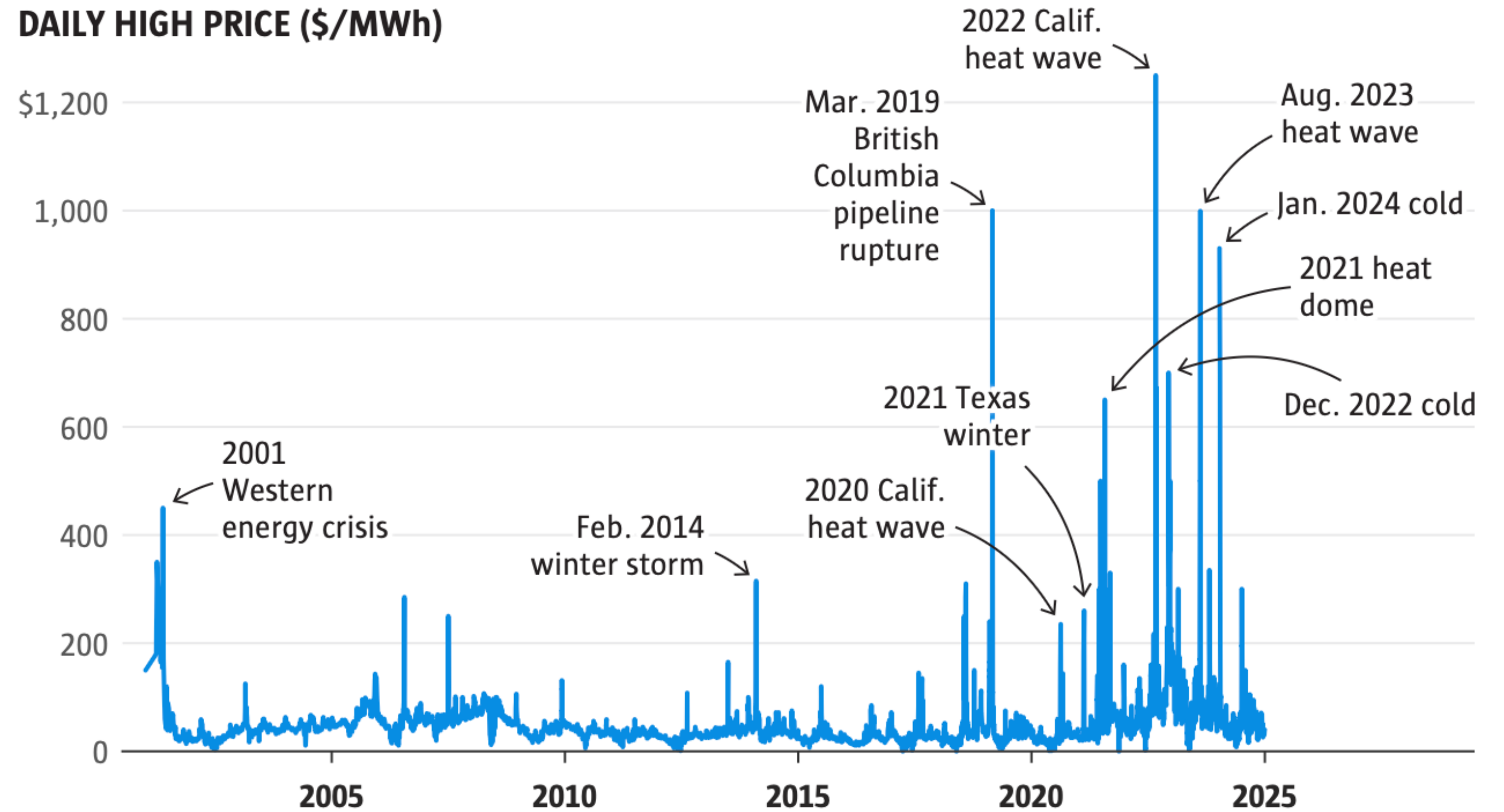
Mainland Weighted Avg. Market Price



Climate change is roiling power markets

Extreme weather events are upending reliability and price for the region's hydropower. The graph below reveals daily high prices in the Pacific Northwest mid-Columbia power market from 2001 to 2024. Peaks coincide with major storms, heat waves and other disruptions.

DAILY HIGH PRICE (\$/MWh)



U.S. Energy Information Administration (Fiona Martin / The Seattle Times)

2026 IRP LOAD FORECAST BRIEFING - PART 2: LOAD 101

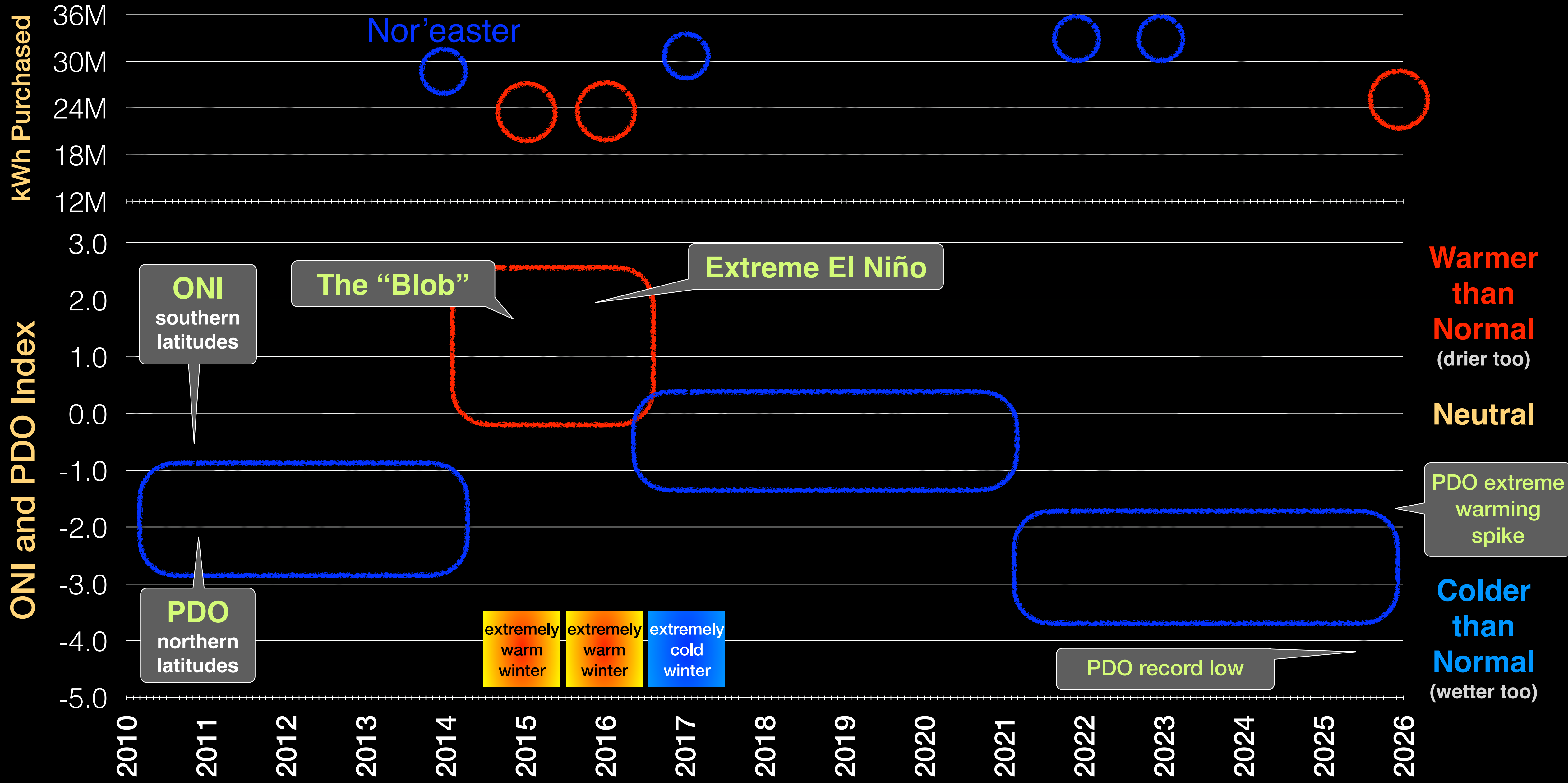
OPALCO

Board Meeting

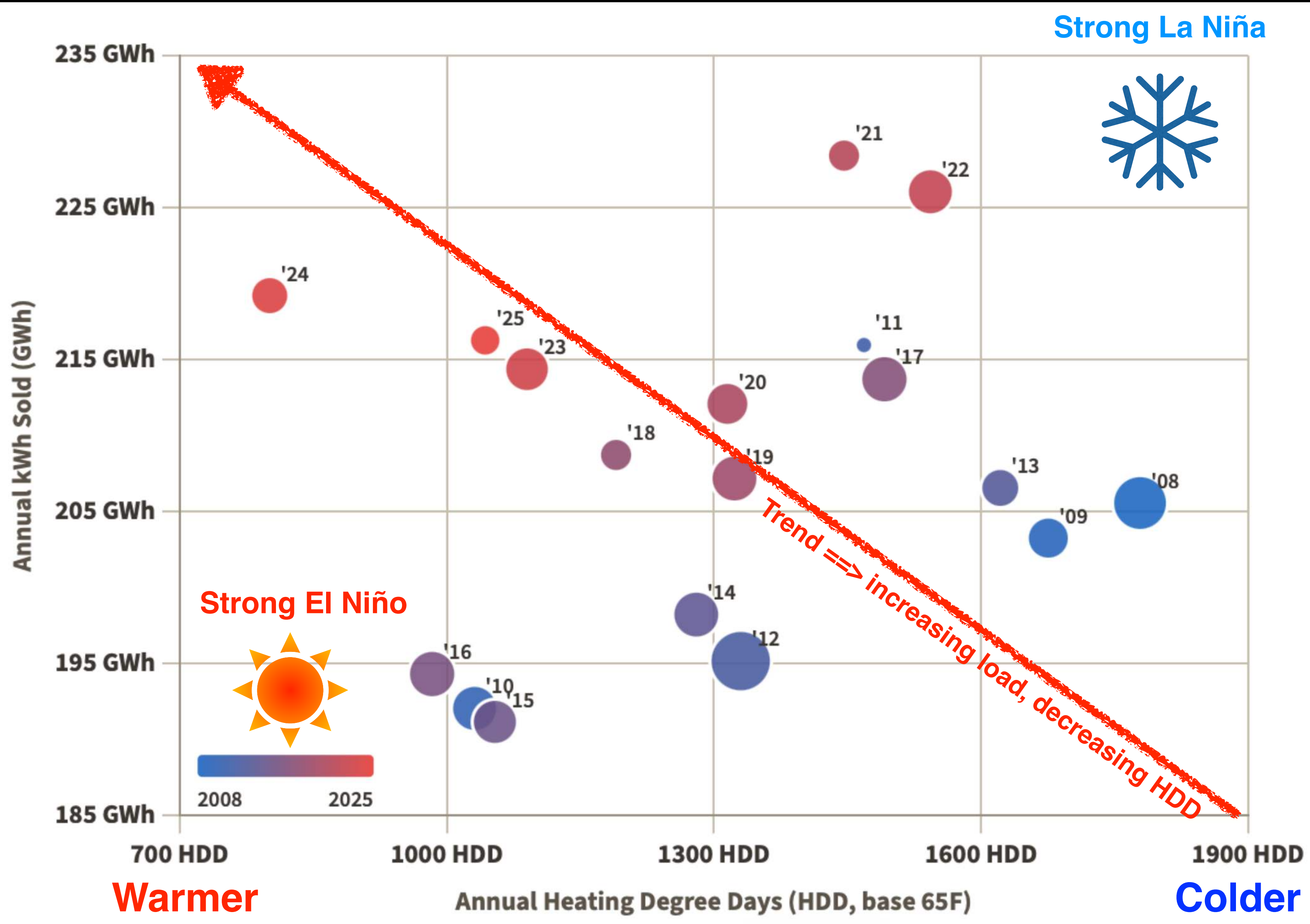
June 2026

OPALCO Load 101

Energy Purchased, ONI and PDO: monthly kWh and peak monthly winter kWh



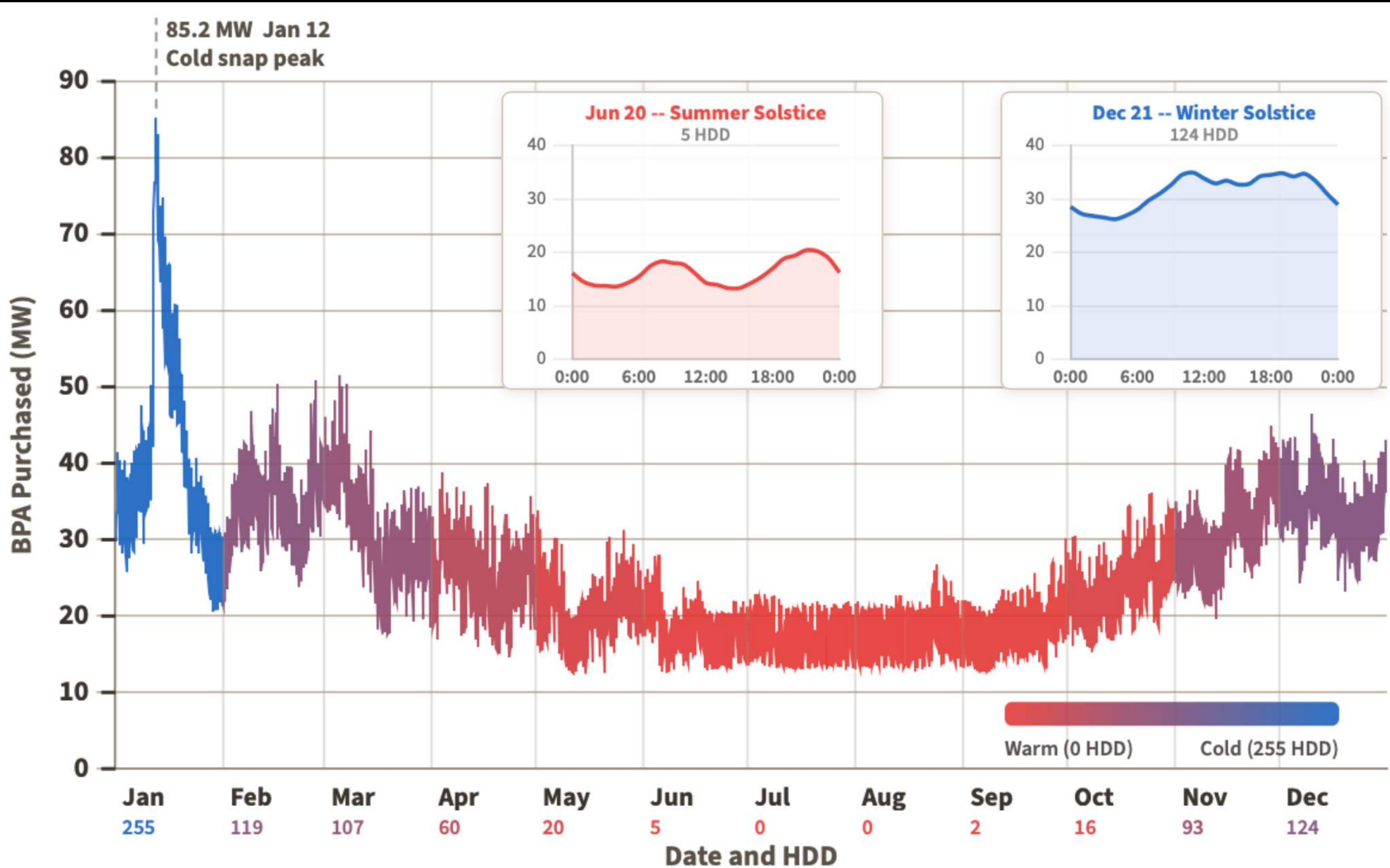
Load Trend: Despite climate warming, winter load is increasing



With local generation, BPA purchased under-represents actual consumption.

Dot size proportional to purchased-to-sold gap percentage – smaller dot means more local solar generation displacing BPA purchased – ranging from -9.2% to -1.4%

2024 Hourly System Load (MW): Summer and Winter Solstice

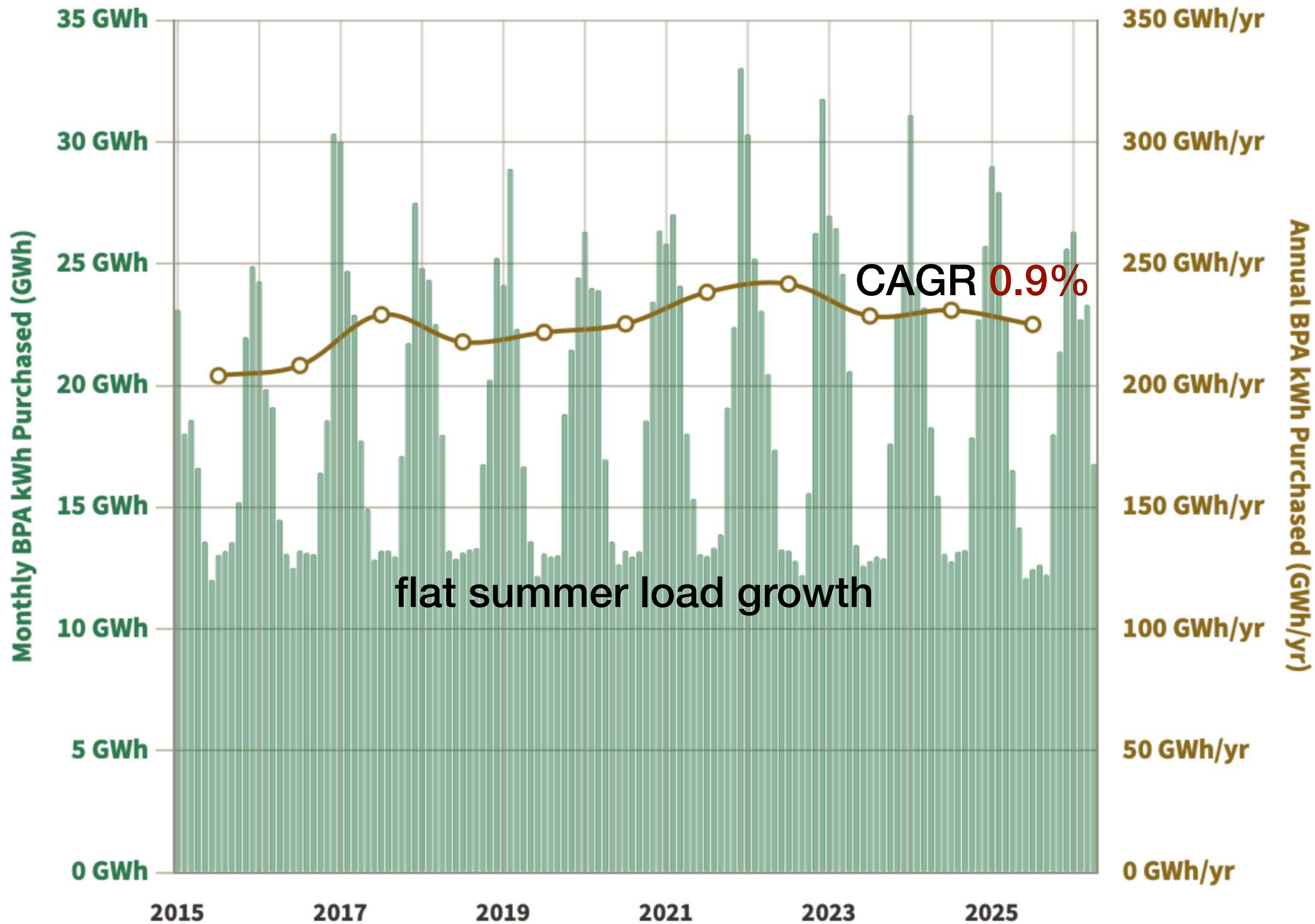


The January cold snap maxed out the NW grid.

Hydro was at 100%, with major backfill from BC hydro and California.

Wind was at zero due to high pressure area.

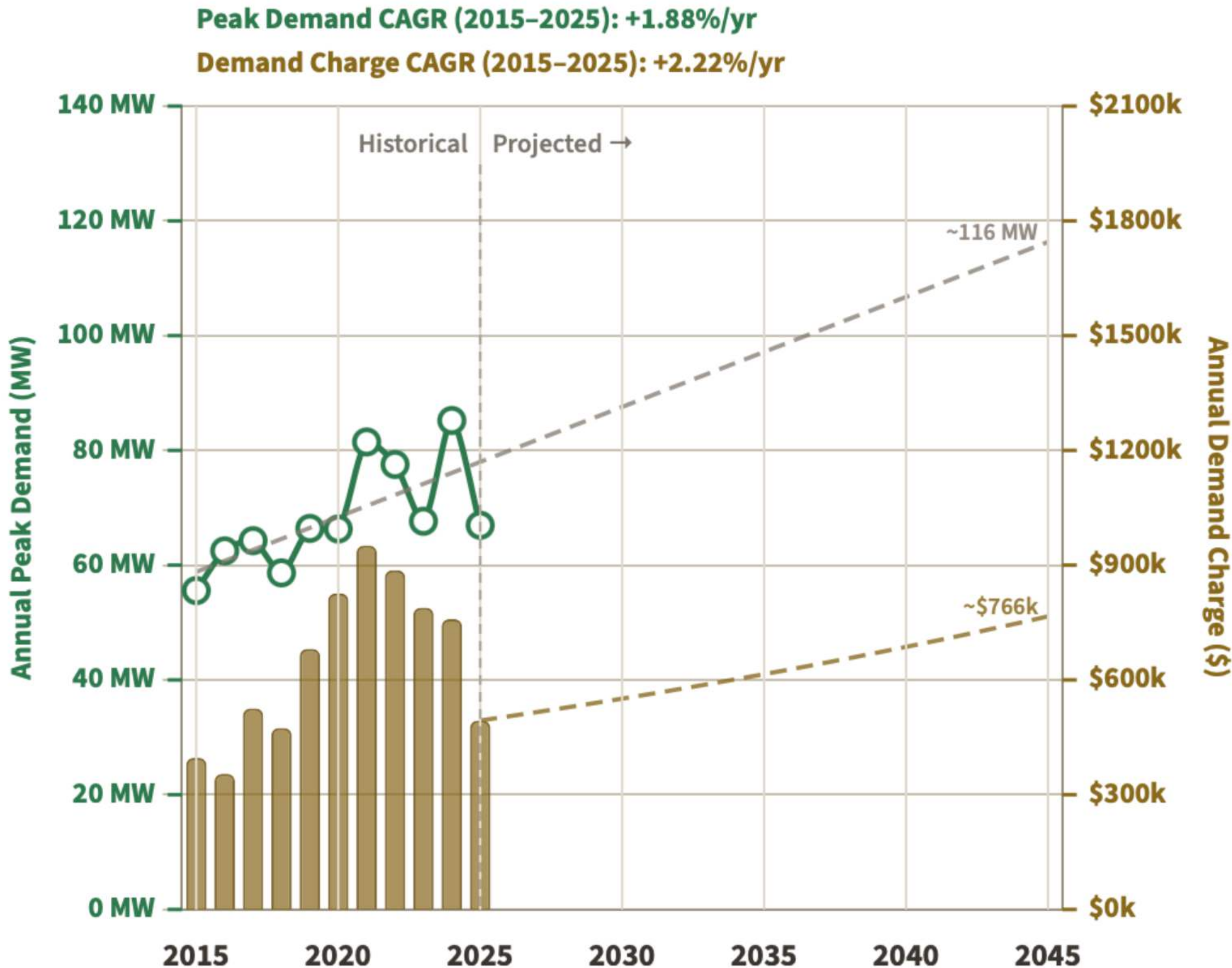
OPALCO Load: 10 Year monthly and annual load



“Switch it Up and energy efficiency programs have made notable reductions in consumption of electricity and fossil fuels, especially in 2025.”

Despite that, 230 GWh annual load is enormous, driven by population growth.

Annual BPA Peak Demand & Demand Charge



Notes

- Implications for submarine cable risk management
- Risk amplification drivers:
 - Demand Charge
 - BPA 2028 contract
 - Increasing market rate exposure
 - Increasing extreme weather events
 - Heat domes and cold snaps

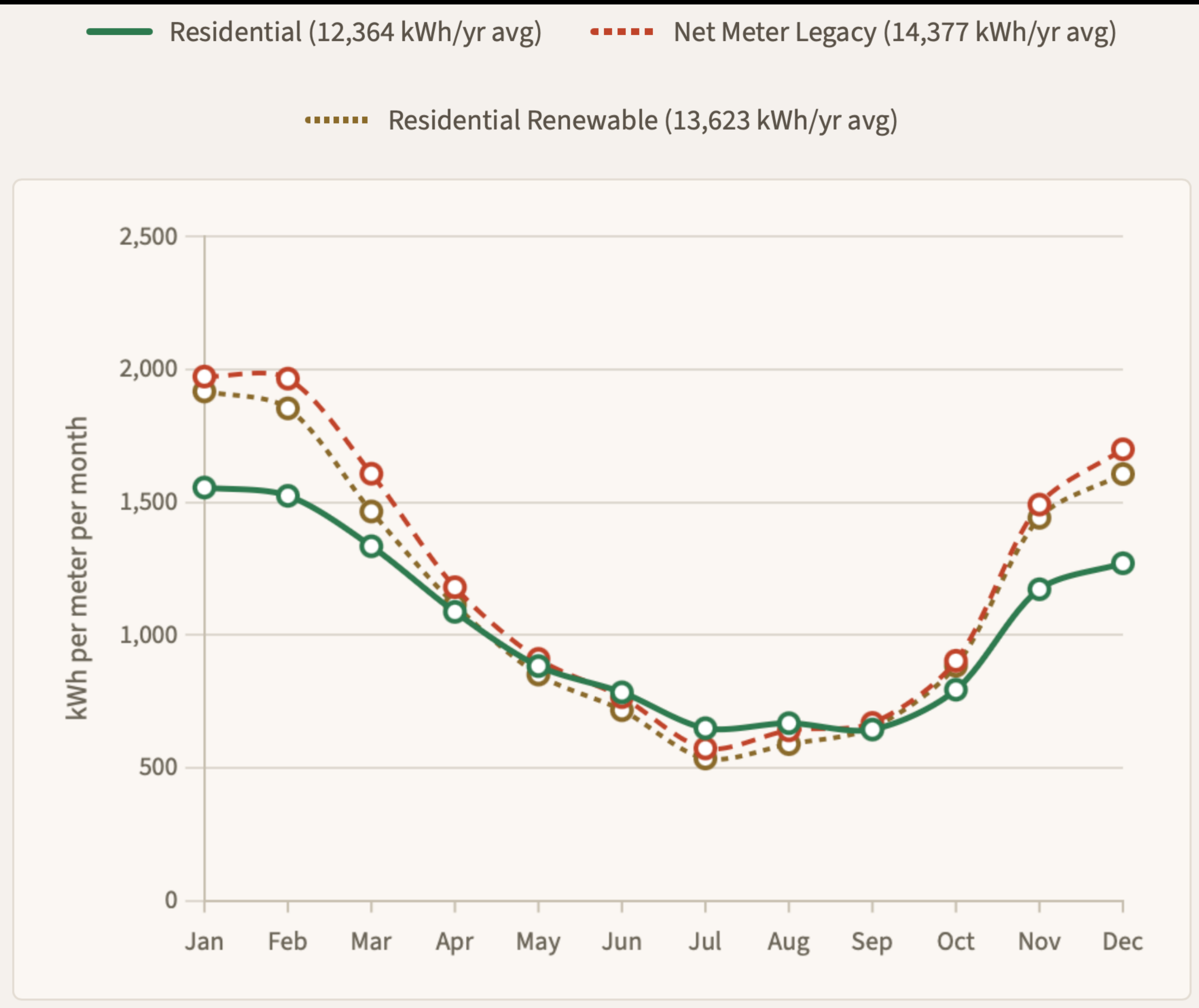
2024 Load by Rate Class

Notes

- 2024 was a neutral weather year, with a winter cold snap and a mild summer
- Residential members account for the largest load

220 million kWh

2024 Residential Sold: Average kWh per meter



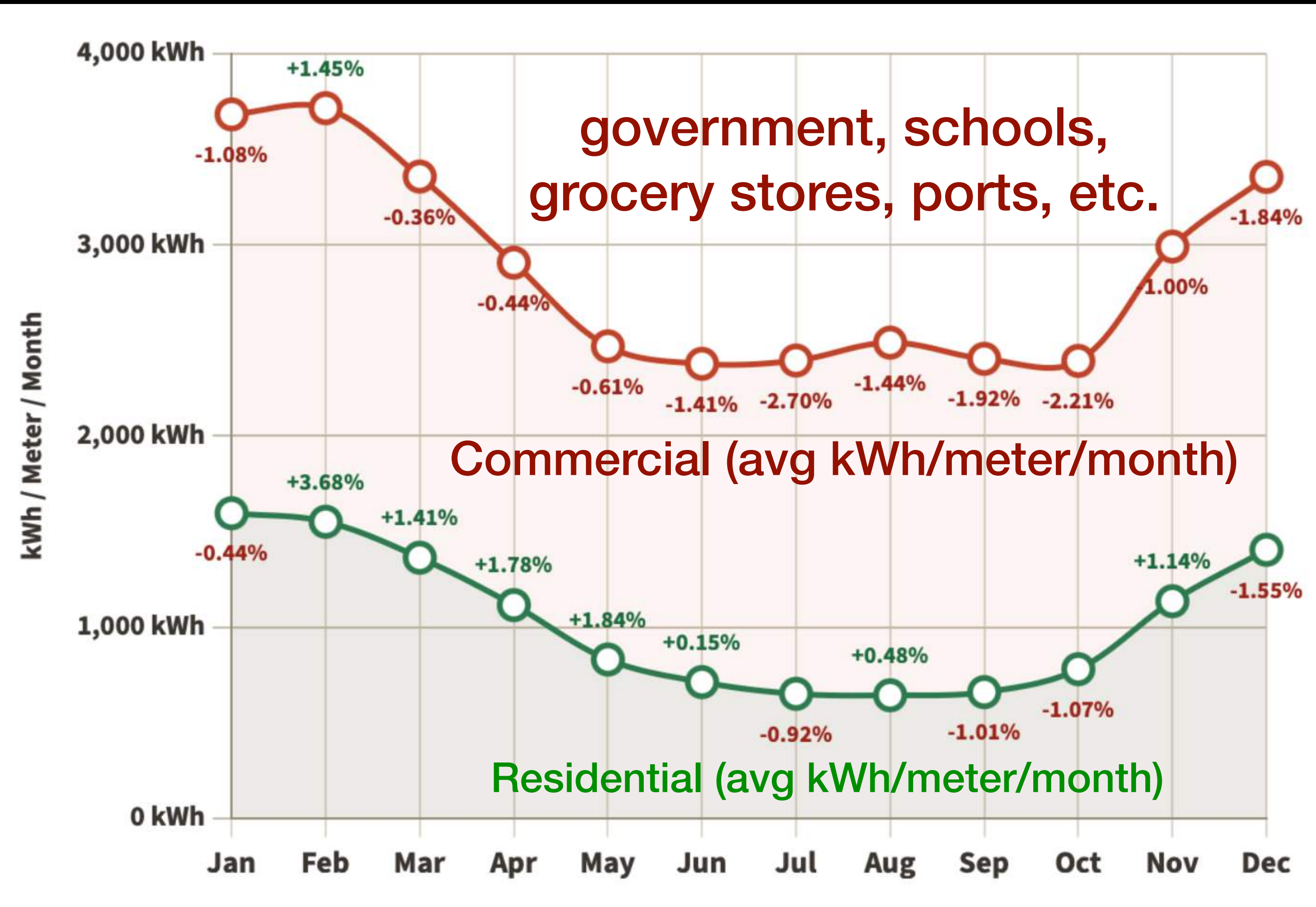
The average residential member consumes about 12,000 kWh per year.

Winter Load is 3x to 4x summer load.

The average solar member consumes 10 to 16 percent more annual energy from OPALCO than non-solar members."

10 Year Average Monthly kWh Sold Per Meter: Residential & Commercial

Residential, and especially commercial members, benefited from major energy efficiency programs and SIU.



Notes

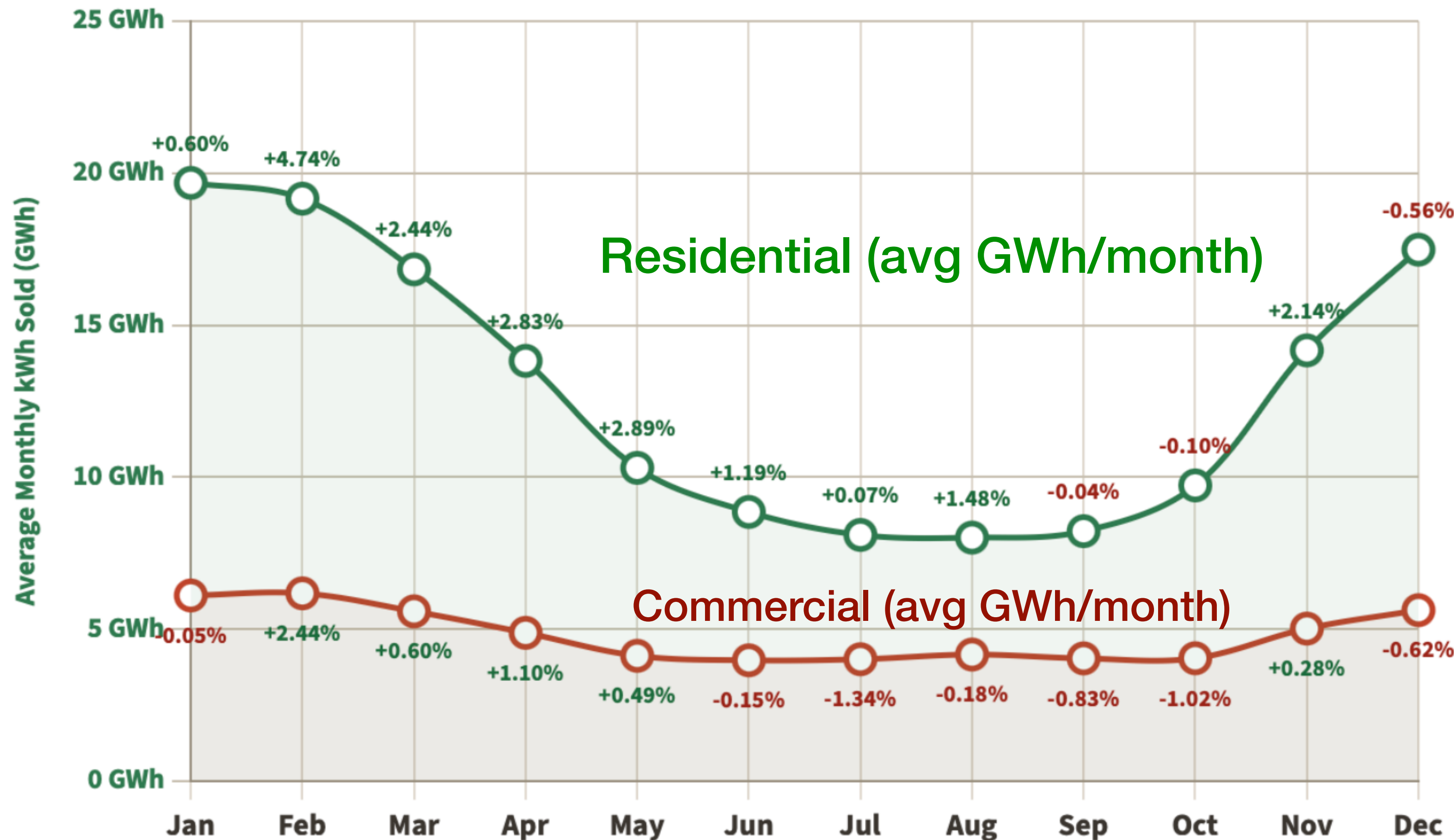
- This is a 10-year average of residential and commercial kWh per meter
- CAGR percentage indicates annual change based on 10-year trend for each month
- Commercial load is trending down, except for February. This may be driven by substantial energy efficiency improvements, incentivized by OPALCO, BPA and Community Energy Challenge. Commercial load also decreased during covid and have yet to fully recover.
- Residential load is trending up except for January, July September, and October. This may be driven by a substantial 65+ population that appreciates being warm in cold months, EVs, and increased newcomers.

10 Year Average Monthly kWh Sold: Residential & Commercial

While co-op EE&C and SIU programs tempered land growth, residential load is relentless.

Notes

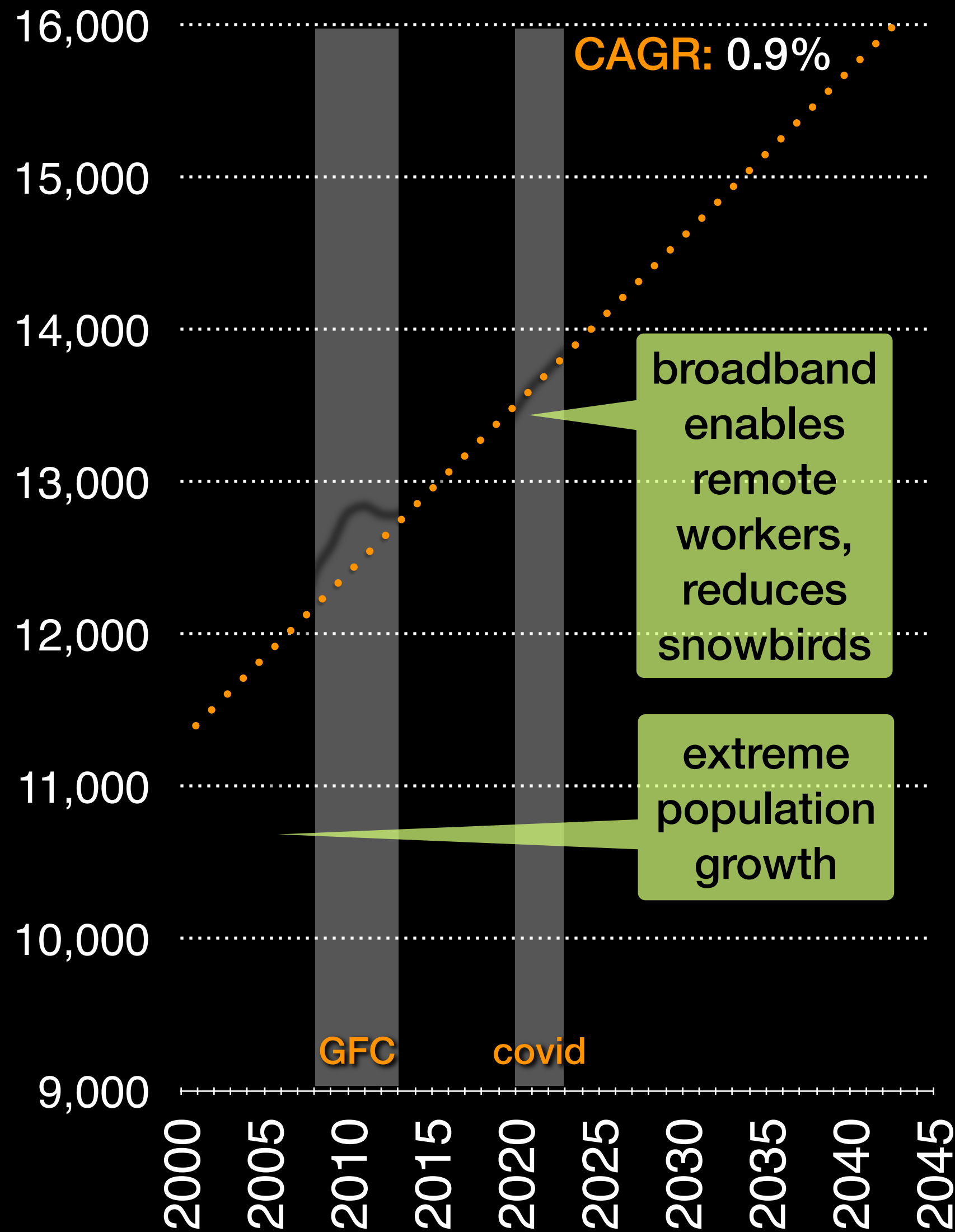
- This is a 10-year average of residential and commercial monthly kWh sold
- CAGR percentage indicates annual change based on 10-year trend for each month
- Commercial load CAGR is 0.14%. This may be driven by substantial energy efficiency improvements, incentivized by OPALCO, BPA and Community Energy Challenge.
- While county population CAGR is about 1%, residential load has been growing 1.61%. This may be driven by electrification of heating and transportation, affluent newcomers, and a substantial 65+ population that appreciates being warm in cold months.



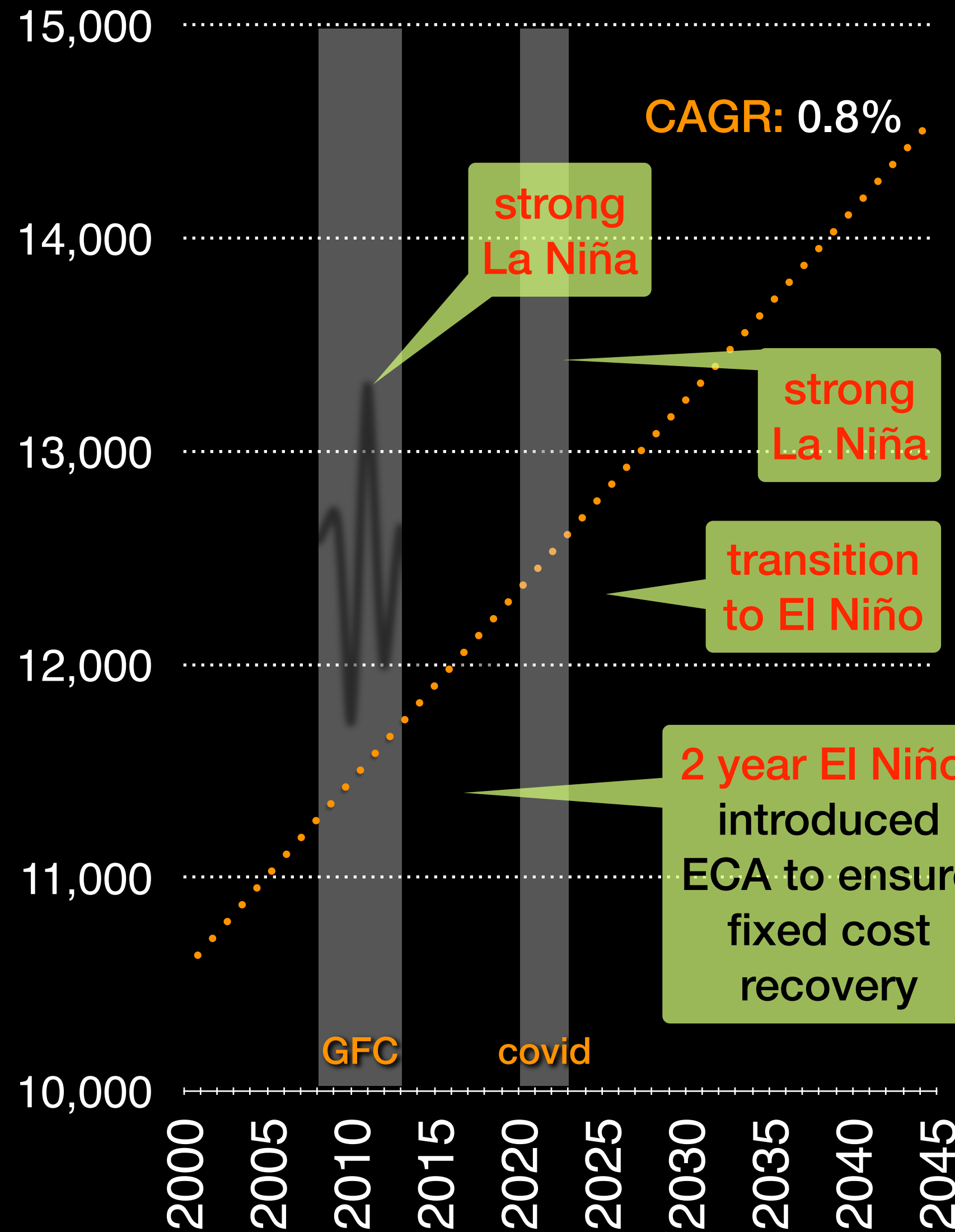
Residential Load Trends

Load is very weather dependent and driven by population growth

Residential Meters



Residential Load / Meter

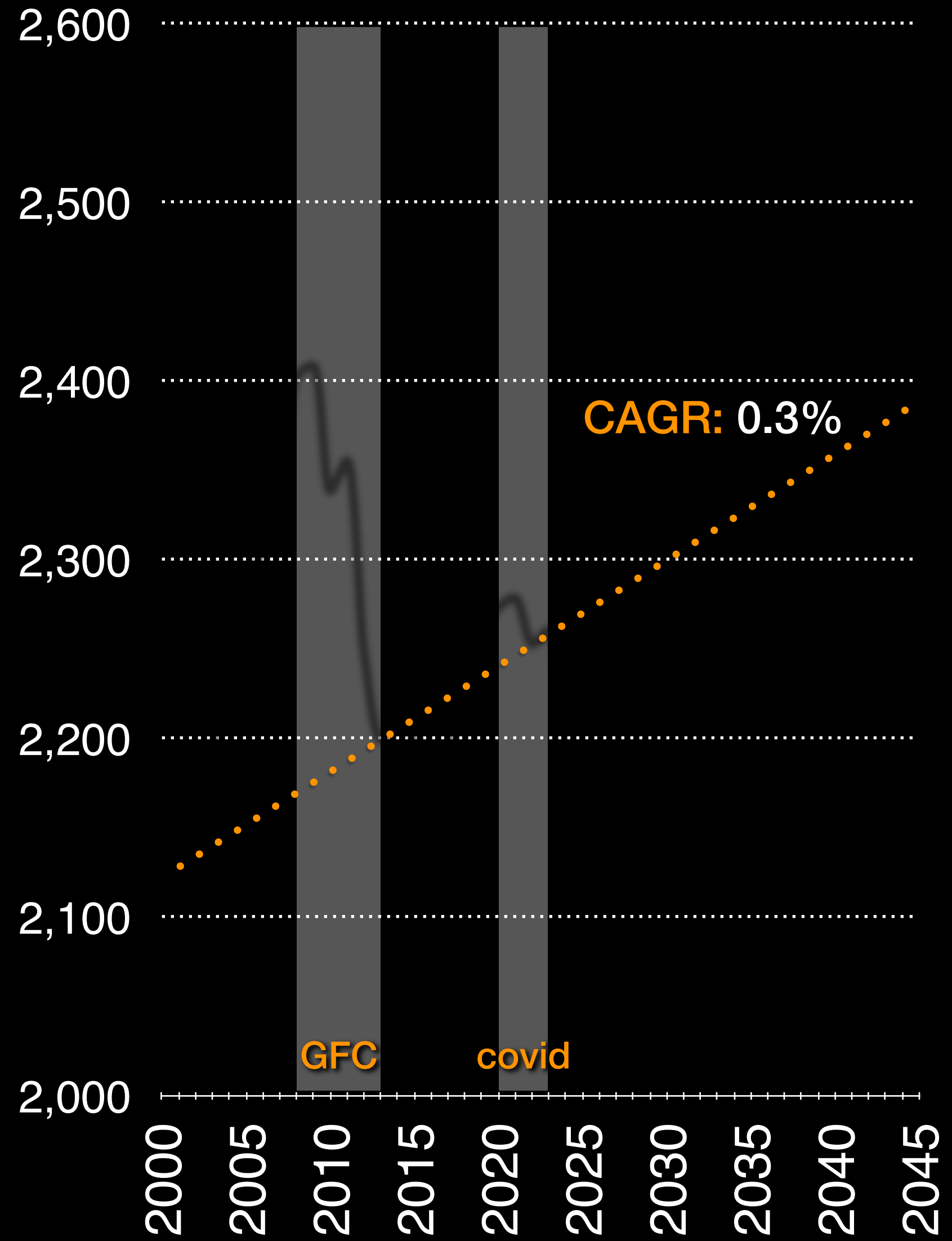


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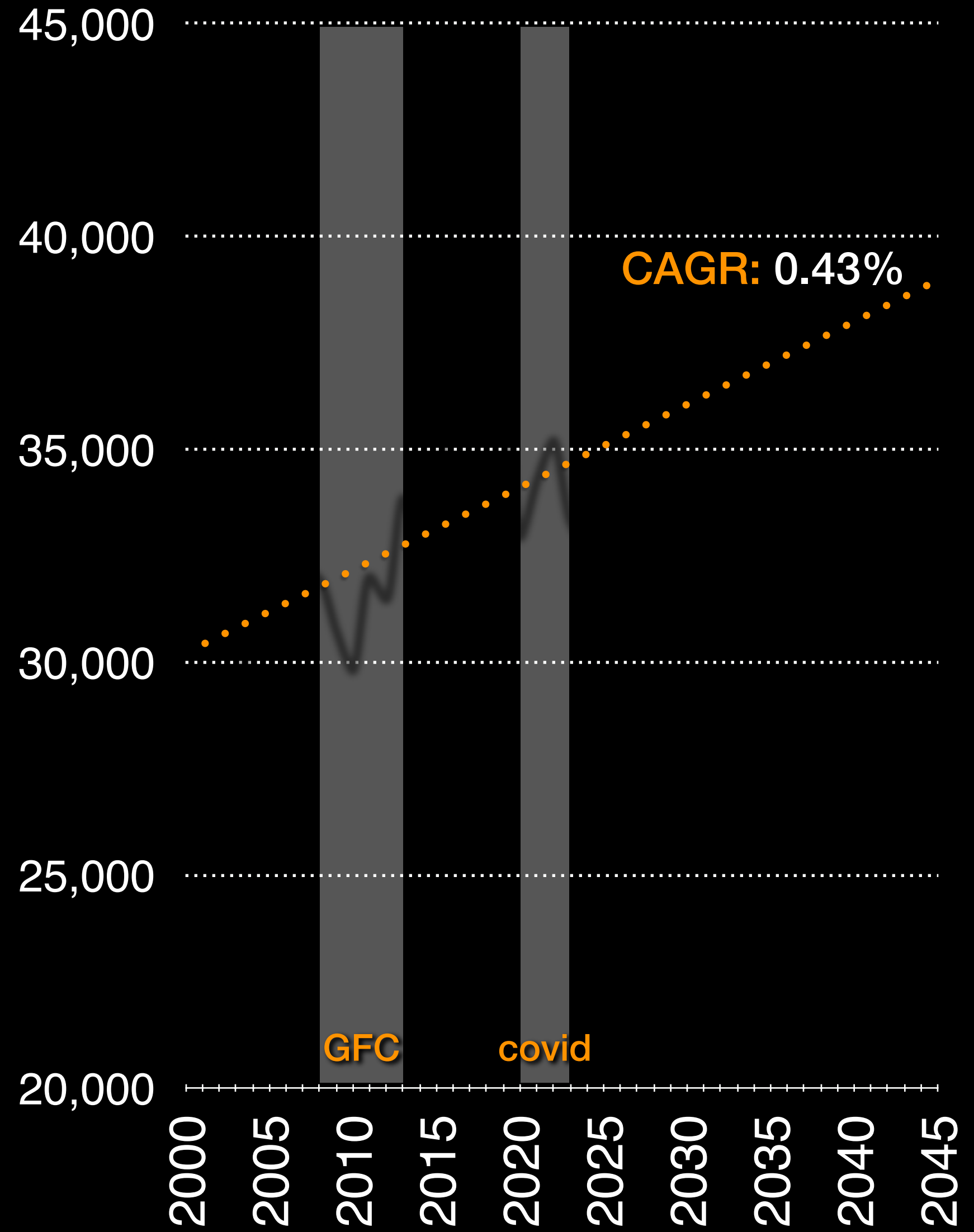
- Extreme growth from mid-1990s to 2008. From 2003 to 2008 the residential meter CAGR was 2.8%.
- The Global Financial Crisis (GFC) stopped that. Post recession, the residential meter CAGR is 0.8%.
- Residential efficiency programs tempered growth, e.g. rebates for weatherization, insulation, windows, LED lighting, etc.
- Switch It Up fuel-switching helped reduce TOTAL energy use, while slightly increasing electric use, e.g. beneficial electrification of fossil-fueled heating and transportation

Commercial Load Trends

Commercial Meters



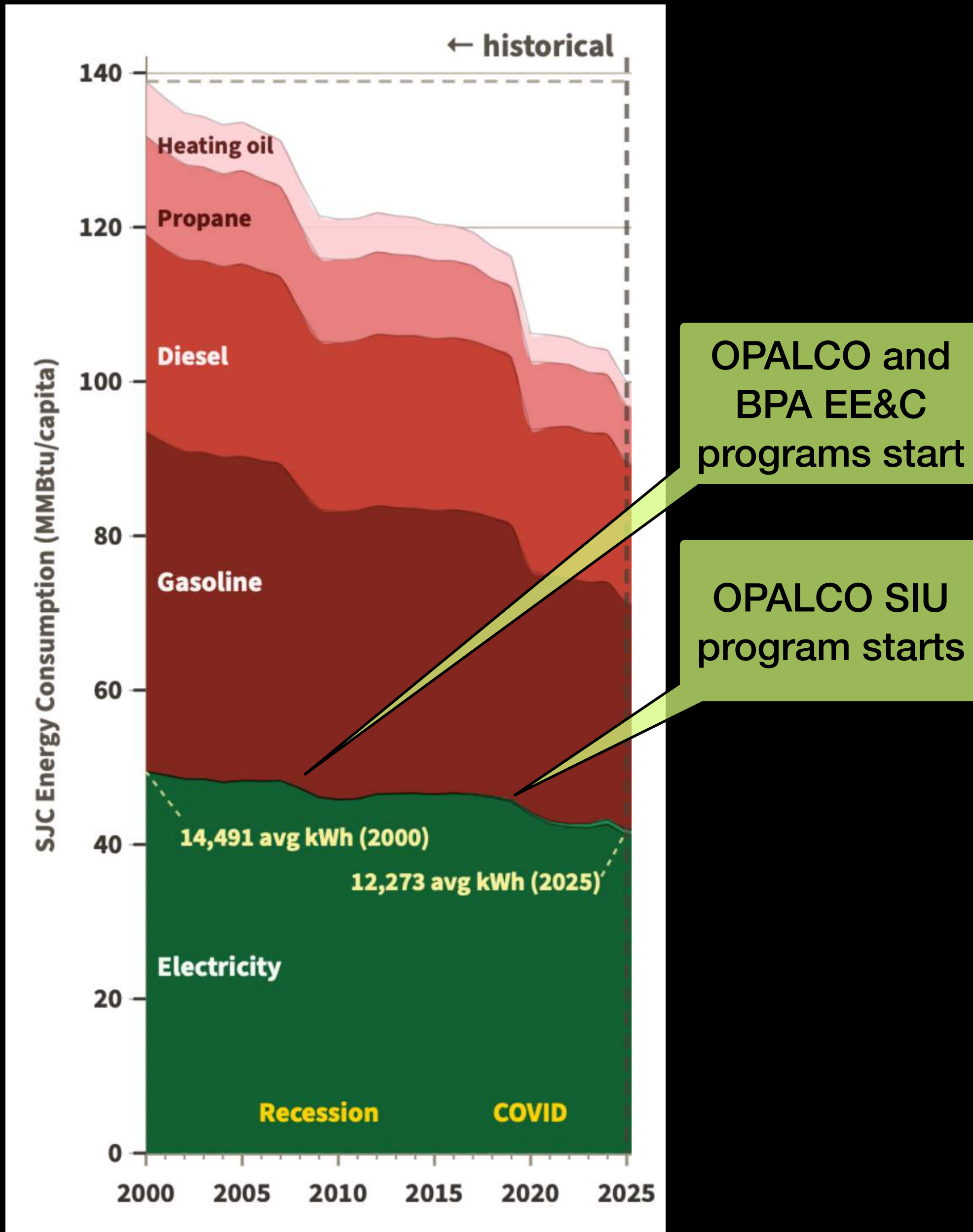
Commercial Load / Meter



Notes

- From 2003 to 2008 the commercial meter CAGR was 2.8%.
- Post GFC, commercial meter CAGR has been about 0.3%. The covid recession introduced a dip that has fully recovered, back to trend.
- Commercial efficiency programs targeted major load sources, e.g. refrigeration, lighting, etc.
- Broadband has likely enabled growth in home businesses.

SJC Energy Consumption Per Capita: 2000 to 2045



OPALCO energy efficiency and SIU programs, fossil fuel cost inflation, and super efficient electric heat pumps and EVs accelerated the transition to electric while saving co-op members money on their TOTAL energy bills.

Notes

- OPALCO energy efficiency and Switch It Up (SIU) programs provided \$40M+ of rebates and finance over the past 20 years
- **EVs**
 - use 4x to 5x less energy than gasoline
 - cost 5x less per mile
 - SJC has highest EVs per-capita in WA
- **Heat Pumps**
 - us 3x to 4x less energy than propane
 - cost 5x less per BTU
- **Energy Efficiency and Solar**
 - save energy and money year after year

OPALCO Climate Action: Leadership in Funding Energy Efficiency and Local Generation

OPALCO has achieved California levels of energy efficiency and rooftop solar generation

Switch It Up

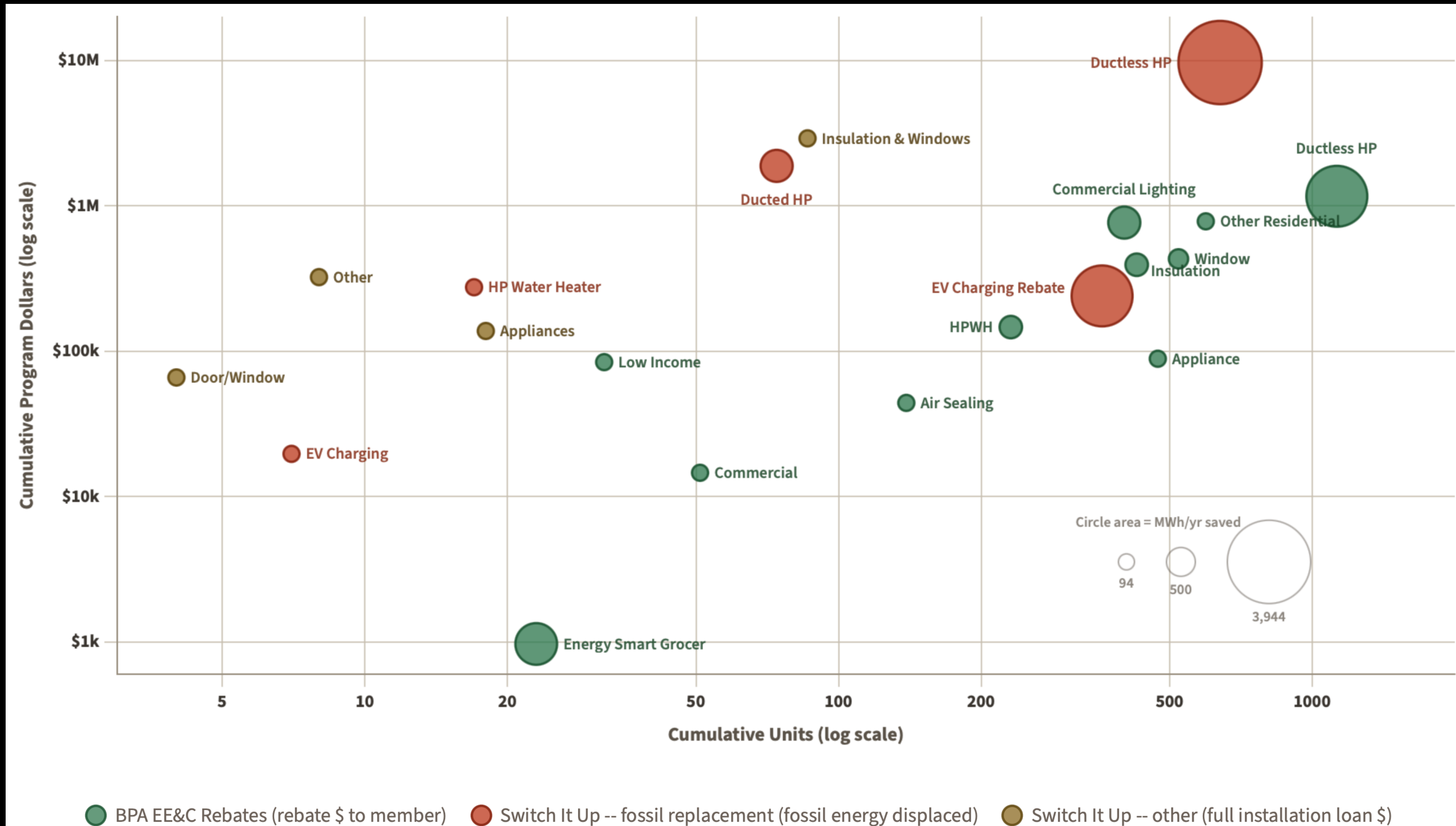
OPALCO can utilize \$46.8M in Rural Energy Savings Program (RESP) funds to provide on-bill financing for co-op members for energy efficiency measures. OPALCO is reimbursed for the funds once member measures are installed. There are now 1,160 projects completed and billing for a total of \$24.2M net outstanding (total projects less member pay-offs). There are another 100+ projects in various stages of the process. Current project details are as follows:

Measure	Project Origination Year							record year	partial	Grand Total	Project Count
	2019	2020	2021	2022	2023	2024	2025	2026			
Appliance					36,112	54,463	43,939	16,728	\$ 151,241	19	
Energy Storage				39,510	27,159	47,766	120,071	-	\$ 234,506	12	
Ductless Heat Pump	729,431	610,352	646,476	1,581,317	1,830,308	2,433,936	2,041,067	604,954	\$ 10,477,841	672	
EV Charger						34,031	2,948	-	\$ 36,979	7	
Fiber		30,725	48,681	29,301	41,929	85,080	18,883	-	\$ 254,598	\$13M 29	
Ducted Heat Pump	7,874	30,000	15,000	18,127	956,659	520,872	412,433	76,752	\$ 2,037,717	74	
Heat Pump Water Heater	9,315	12,752		5,012	67,612	13,700	428,727	-	\$ 537,117	17	
Insulation			-	256,935	58,228	244,969	704,402	29,249	\$ 1,293,783	43	
Other		24,996		92,649	188,075	31,981		-	\$ 337,701	8	
Solar + Storage				480,057	474,806	766,179	1,487,014	557,542	\$ 3,765,596	\$14M 63	
Solar				1,930,830	3,253,980	2,738,875	2,030,633	170,258	\$ 10,124,576	265	
Windows				563,557	459,573	551,874	1,313,914	44,974	\$ 2,933,892	69	
Grand Total	\$ 746,620	\$ 708,825	\$ 710,157	\$ 4,997,295	\$ 7,394,440	\$ 7,523,724	\$ 8,604,030	\$ 1,500,456	\$ 32,185,547	1,278	

available for home, commercial, parking lots, etc.

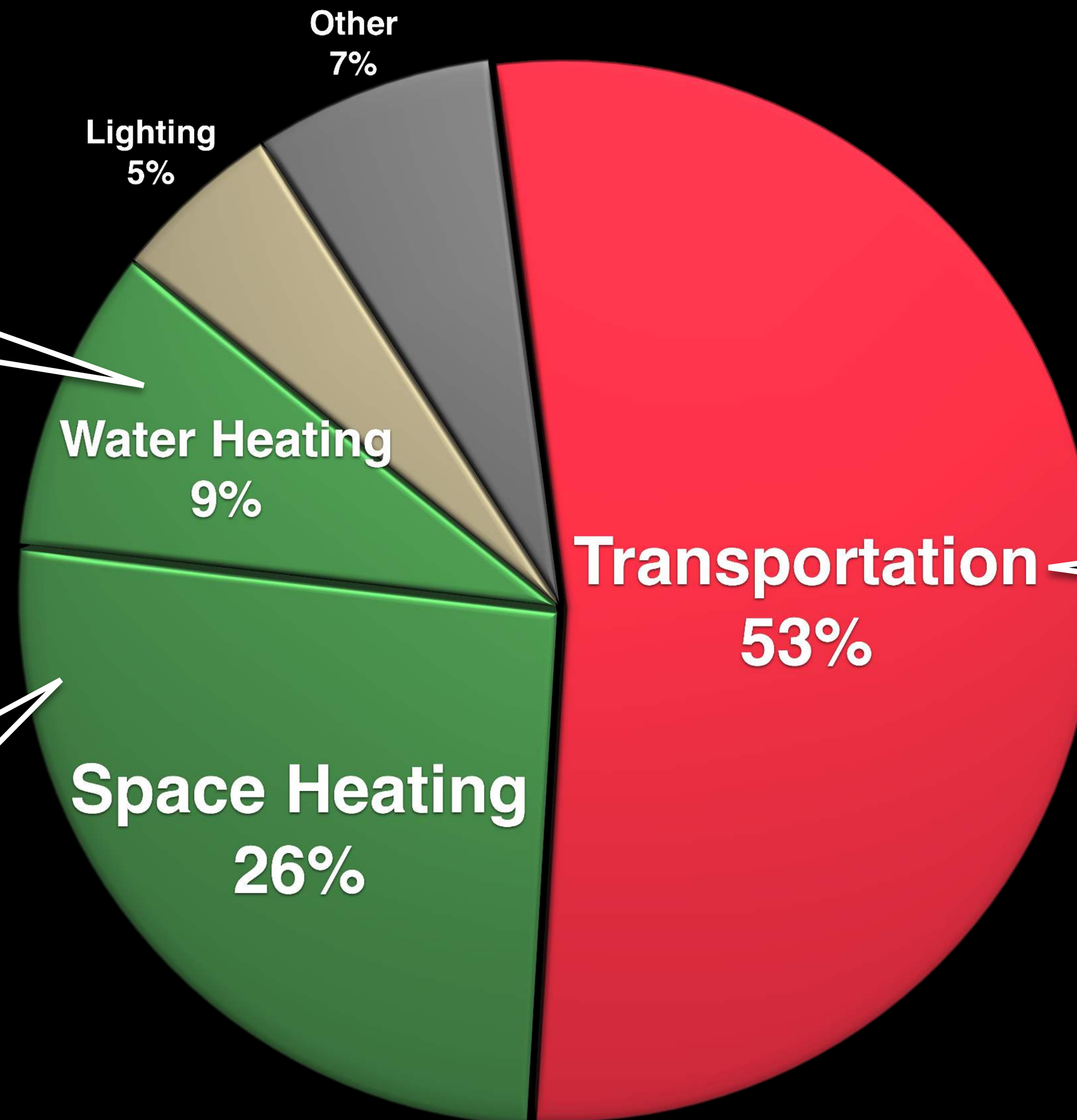
OPALCO Energy Efficiency Programs: BPA, Rebates, Switch It Up

*Units vs. Dollars, Circle area proportional to estimated annual MWh/eBTU saved/
displaced by the full installed base, projecting forward one year from today*



The Next Wave of Efficiency: Electrification of heating and transportation

Home Energy Use



Heat pump water heaters are **3 times** more efficient than natural gas

EVs are **5 times** more efficient than gasoline vehicles

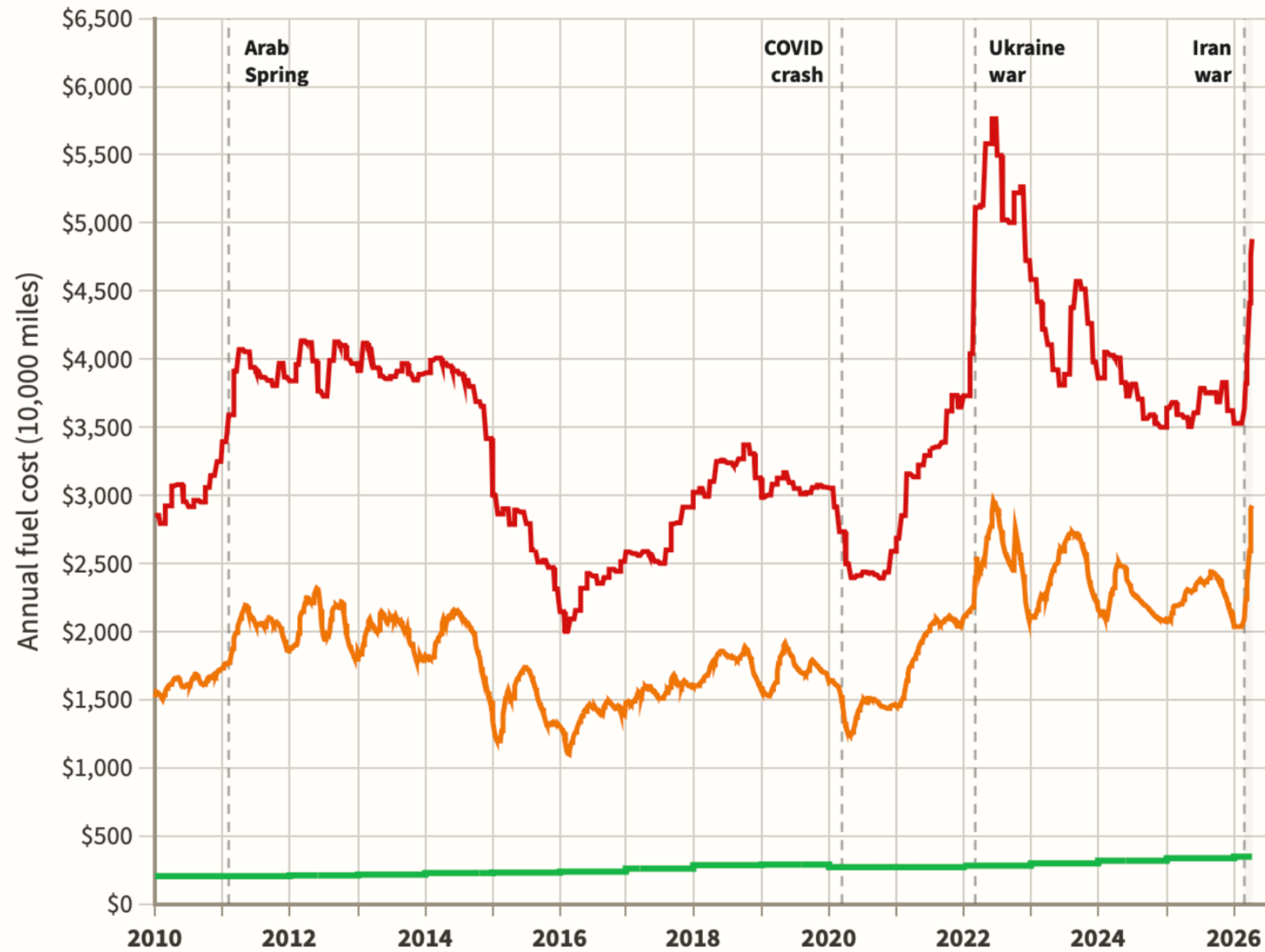
Heat pumps are **4 times** more efficient than natural gas

SJC Energy Consumption Per Capita: 2000 to 2045

Annual Fuel Cost of Driving 10,000 miles in San Juan County

Comparing fluctuating energy costs to fuel an average EV, gasoline car, and diesel pickup truck.

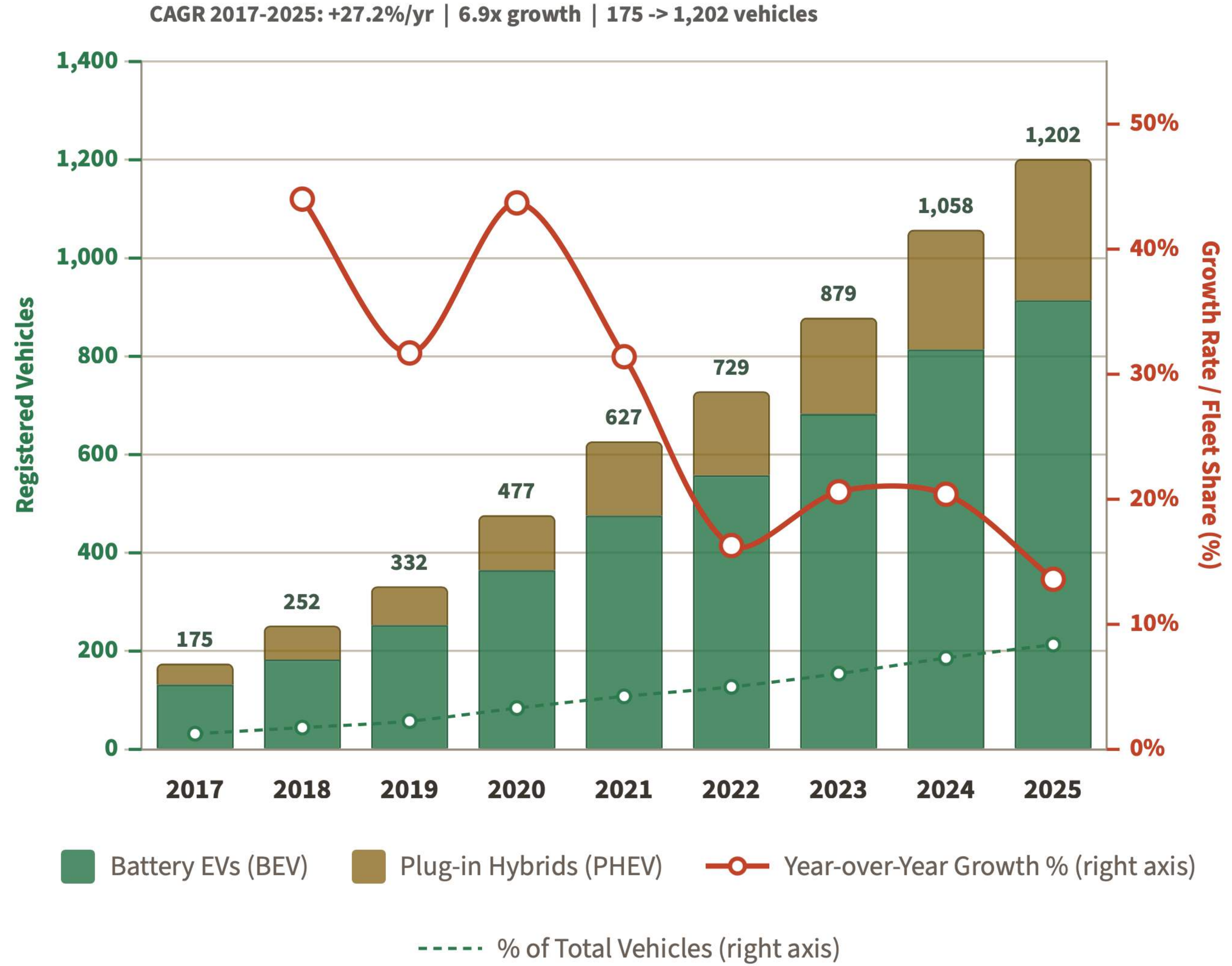
— Average EV — 4 miles/kWh — Average gas car — 27 MPG — F-250 diesel — 17 MPG



Sources: OPALCO energy rate from published tariffs. SJC weekly regular gasoline and diesel prices from EIA WA adjusted for local markup, AAA for recent 2026 SJC pricing. SJC EV efficiency 4 miles per kWh. US average car efficiency = 27 MPG. Ford F-250 diesel = 17 MPG.

Global events that drive up gasoline prices typically stimulate EV sales.

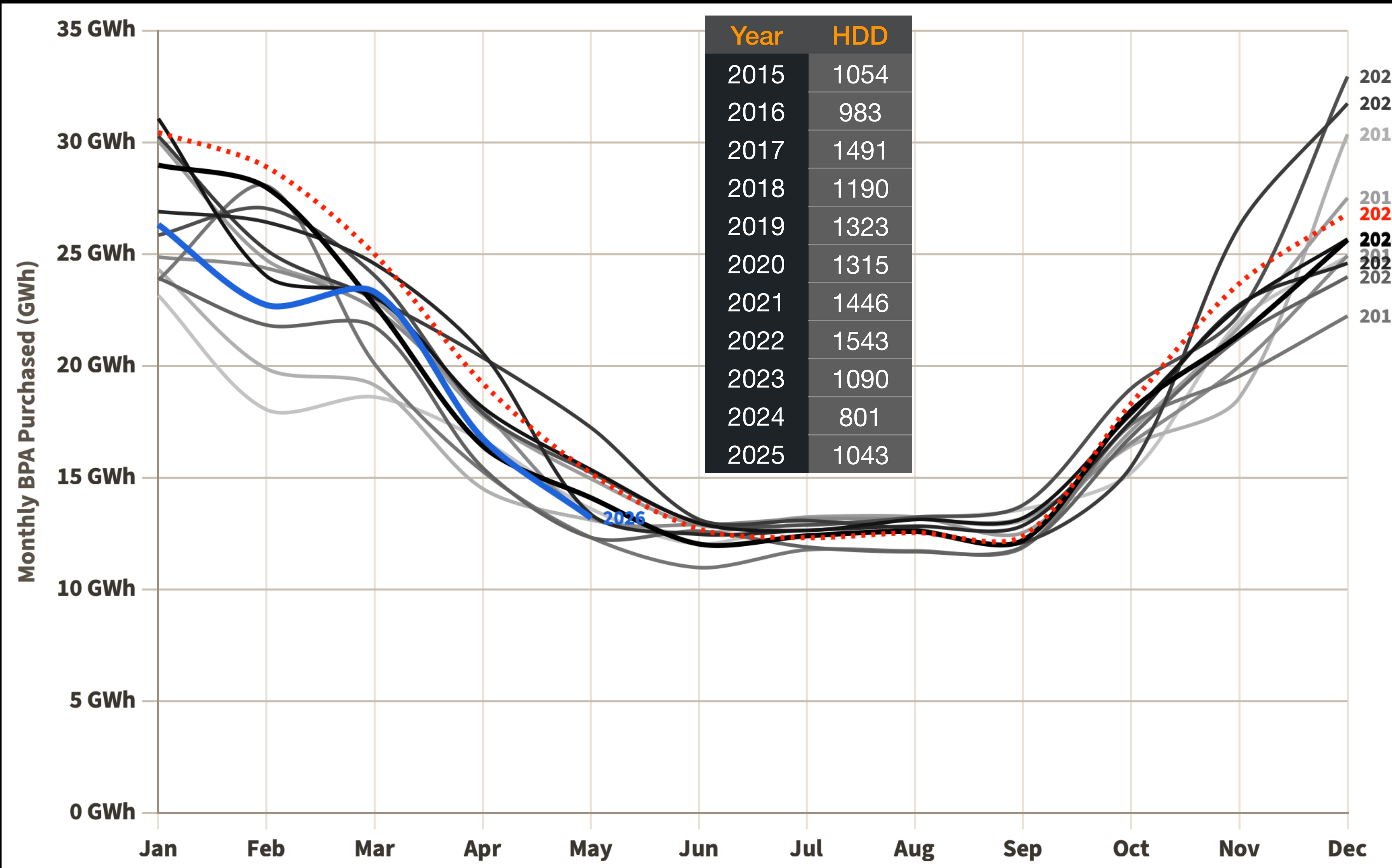
Beneficial Electrification: EVs in San Juan County



San Juan County has the highest EV per capita share in WA.

A typical islander, driving 8,000 miles per year on island will use about 2,000 kWh, costing about 5x less than gasoline.

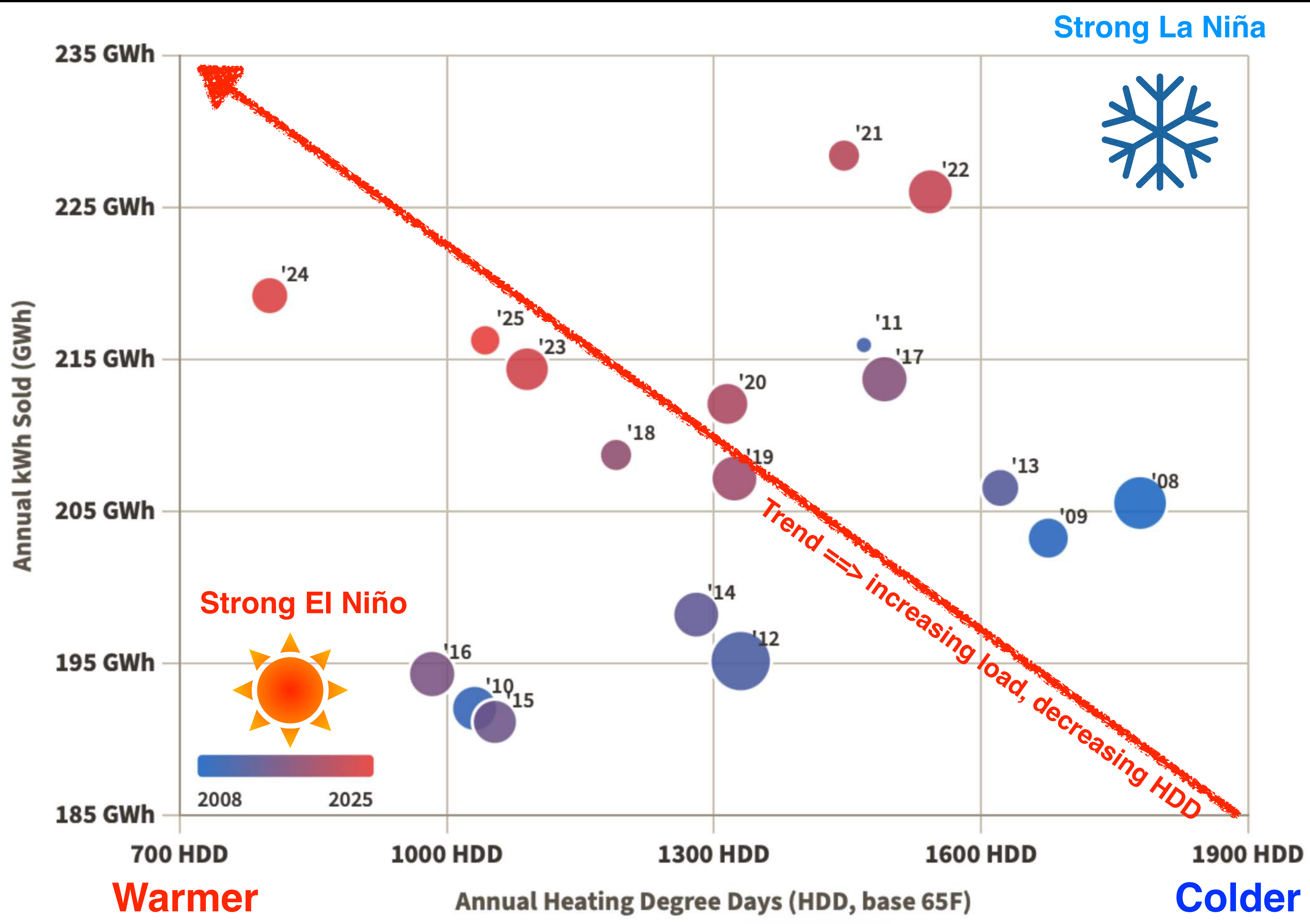
BPA Purchased Energy: 2015 to present, 2027 projected



Notes

- 2015 to present lighter gray to darker
- 2026 to present is blue
- 2027 projected is red, based on ordinary least squares regression fitted separately for each calendar month using 2015-2025 actuals
- 2027 projected total = 237.5 GWh
- Winter variance is very dependent on El Niño and La Niña cycles and Pacific Decadal oscillation
- December, January, February CAGR = 2.01%

Load Trend: Despite climate warming, winter load is increasing



With local generation, BPA purchased under-represents actual consumption.

Dot size proportional to purchased-to-sold gap percentage — smaller dot means more local solar generation displacing BPA purchased — ranging from -9.2% to -1.4%

Discussion