2026 IRP Load Forecast Briefing

OPALCO

Board Meeting

May 2026

IRP Agenda and Sequence

- May - Load Forecast
- Forthcoming IRP Board Topics
  - 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
- Load 101
- Load Forecast

Long Range Planning Strategy

Helping members prepare

- 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)

- 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

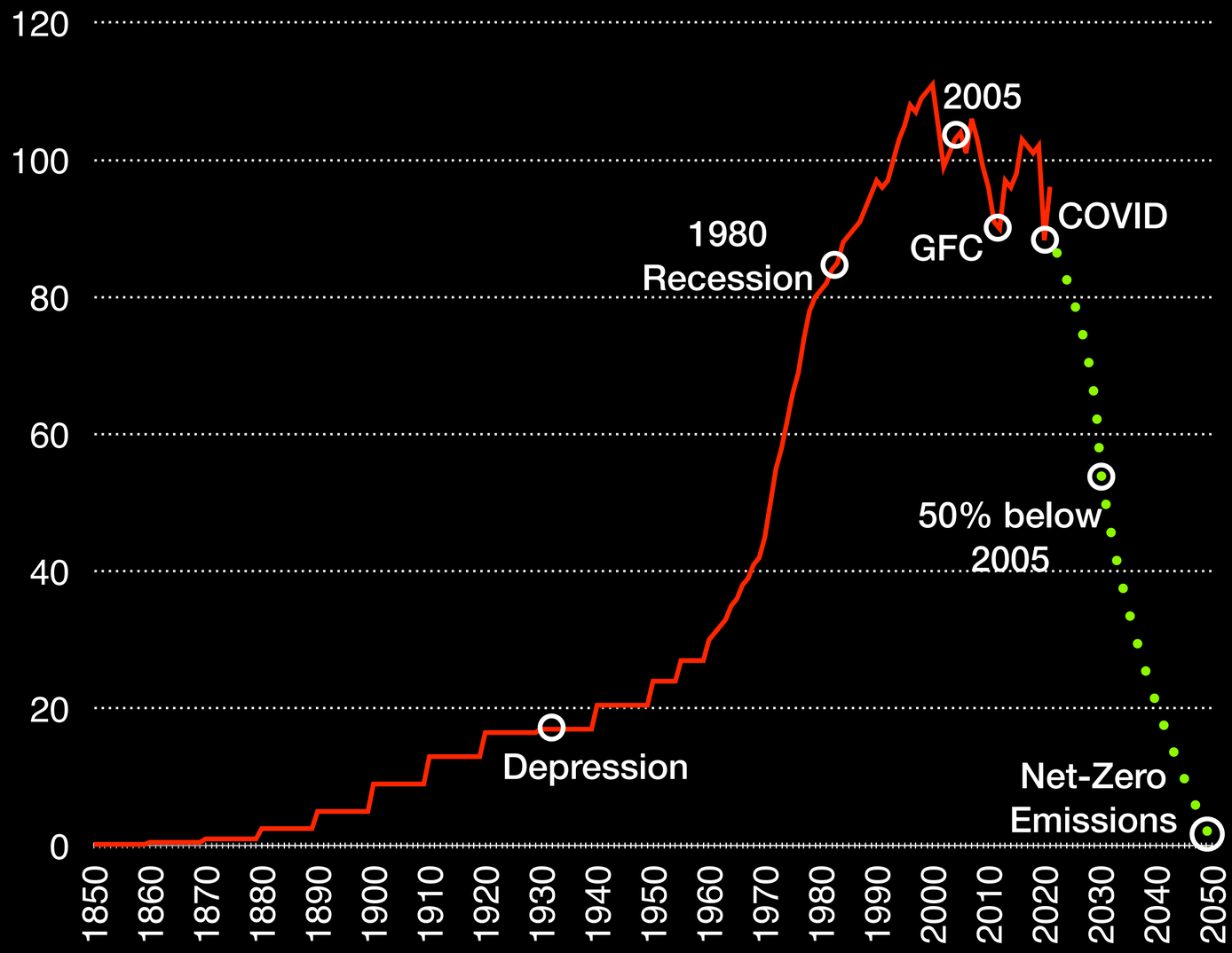
- Work with San Juan County to update local permitting process
  - Land-use tables - streamline local renewable permitting, evolve from old fossil fuel generation model
  - "Essential Public Utilities" language update in the Uniform Development Code

- 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)

- 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 CO_2 Emissions: 1850 - 2050 (Million Metric Tons - MMT)



"Not even close!"

Washington Objectives

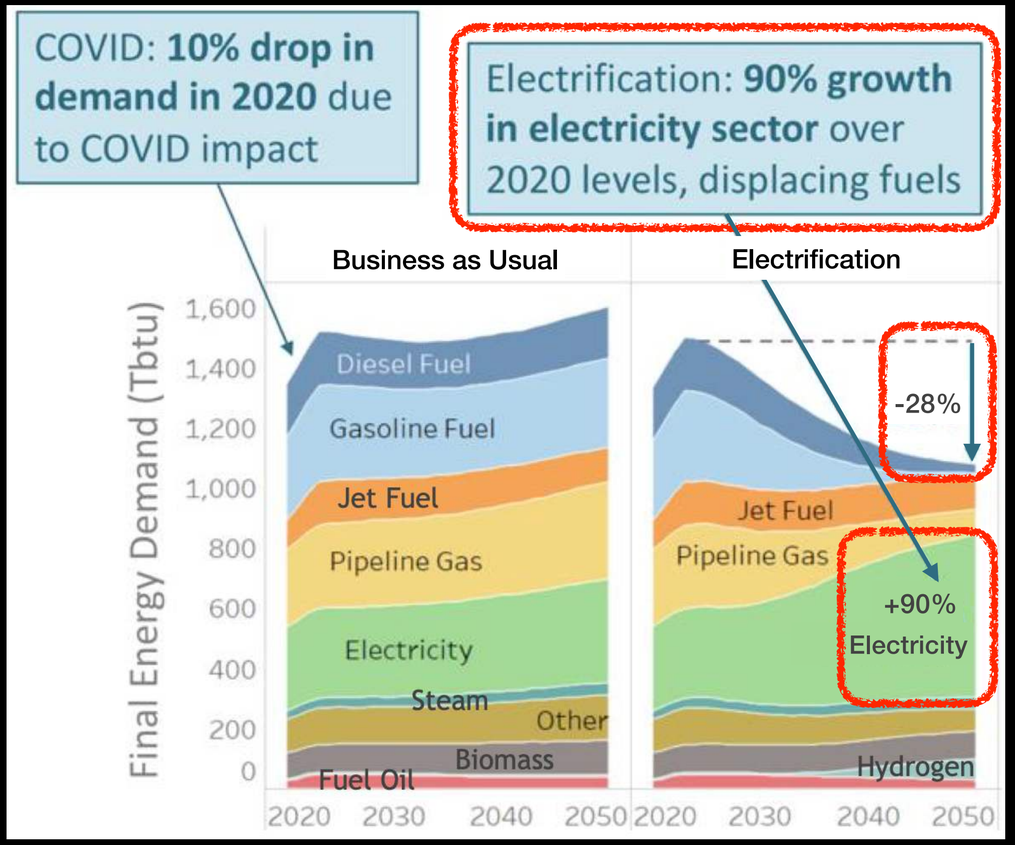
- reduce GHG emissions 50% below 2005 levels by 2030, Net-Zero by 2050
- invest in infrastructure, renewables + storage, resilience, electrify transportation (cars, trucks, ferries, planes)
- delivering 40% of the benefits to disadvantaged communities
- increase clean-tech jobs
- substantial funds from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

source: EPA; WA Dept. of Ecology GHG Inventory

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

Source: Washington 2021 Energy Strategy

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

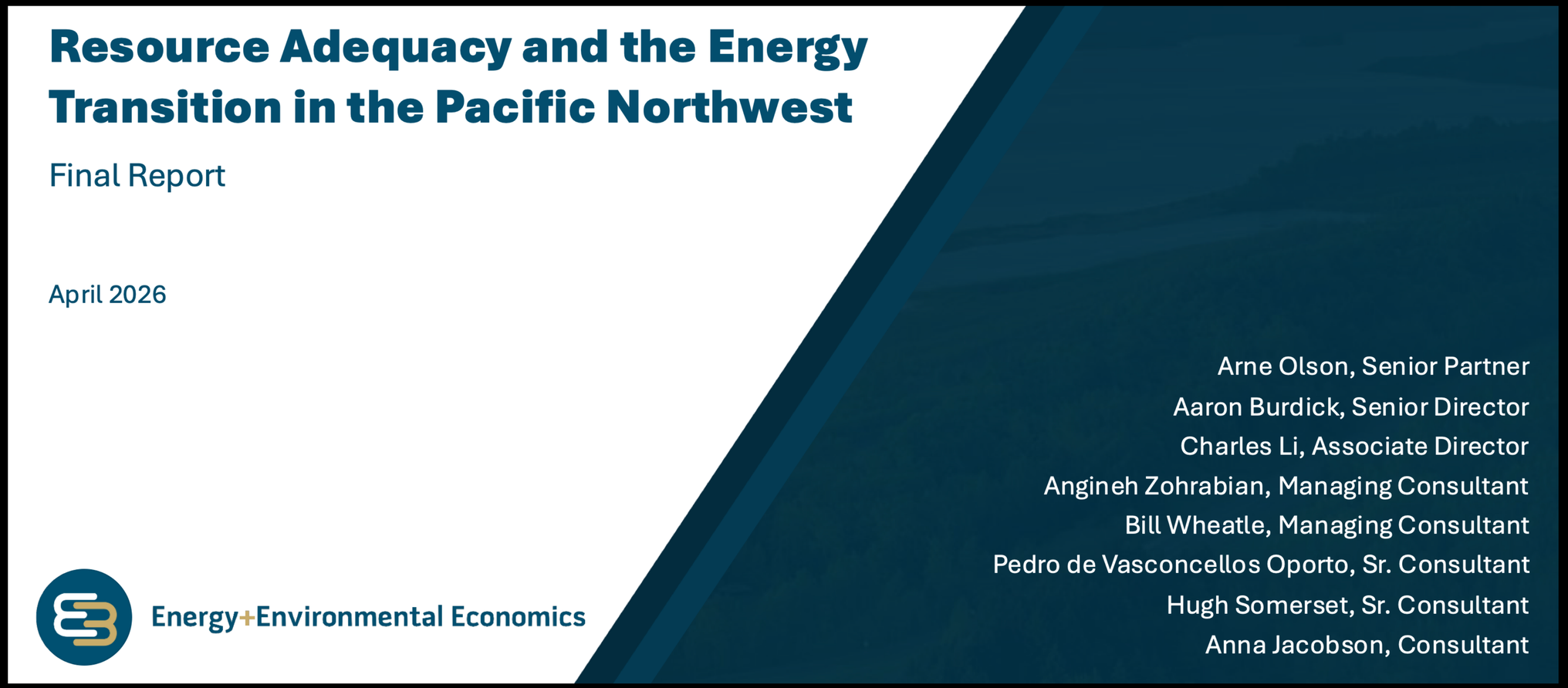
Clean Energy Technical Assistance

Washington Grid Resilience Program

Source: Washington Dept of Commerce

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



Source: E3

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

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.

Source: E3

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

WECC 2029 NW Assessment

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

E3 ELCC Analysis

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*

Energy+Environmental Economics 13

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).

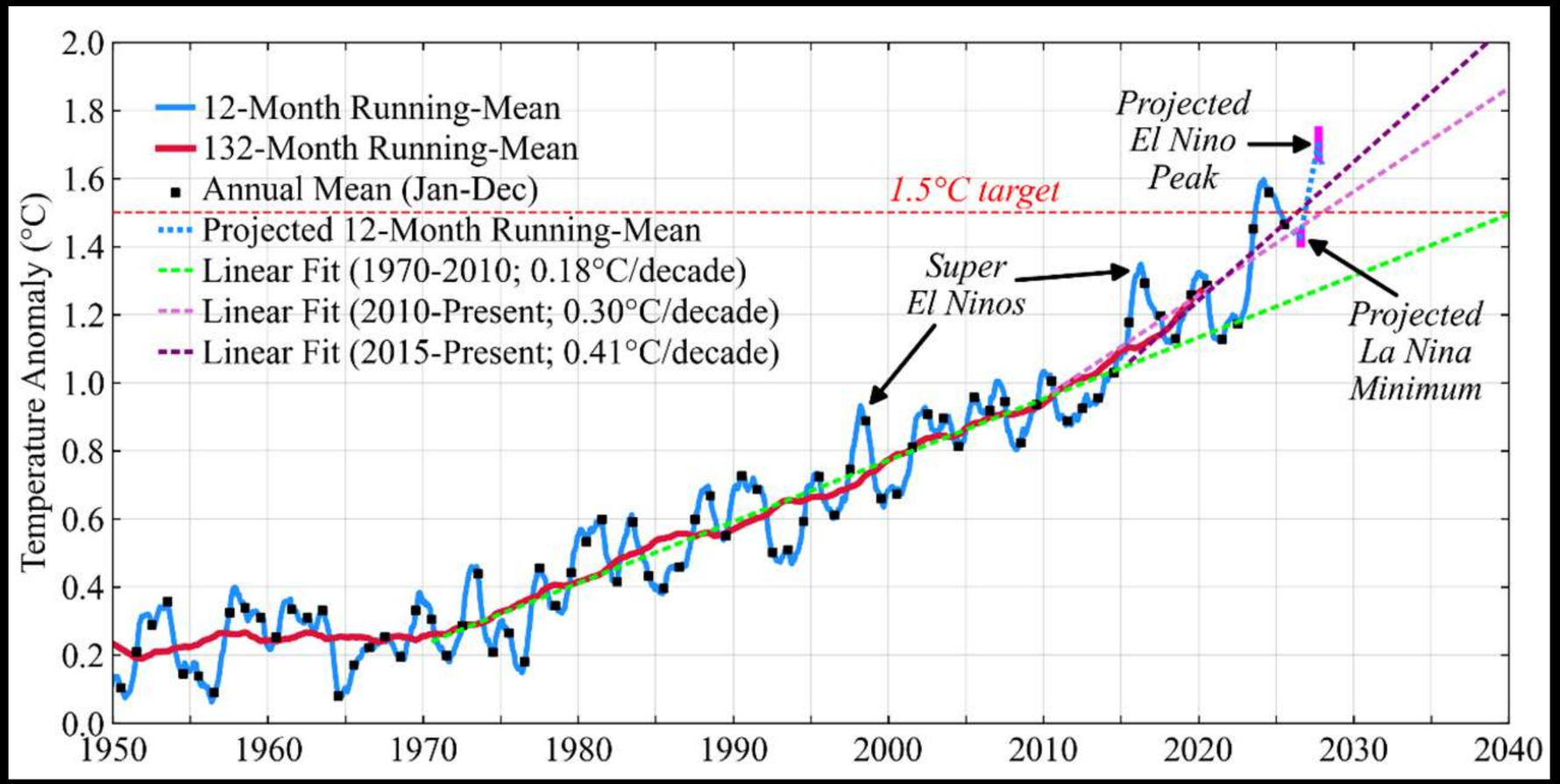
Source: E3 2026, NERC Long-Term Reliability Assessment 2026

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)



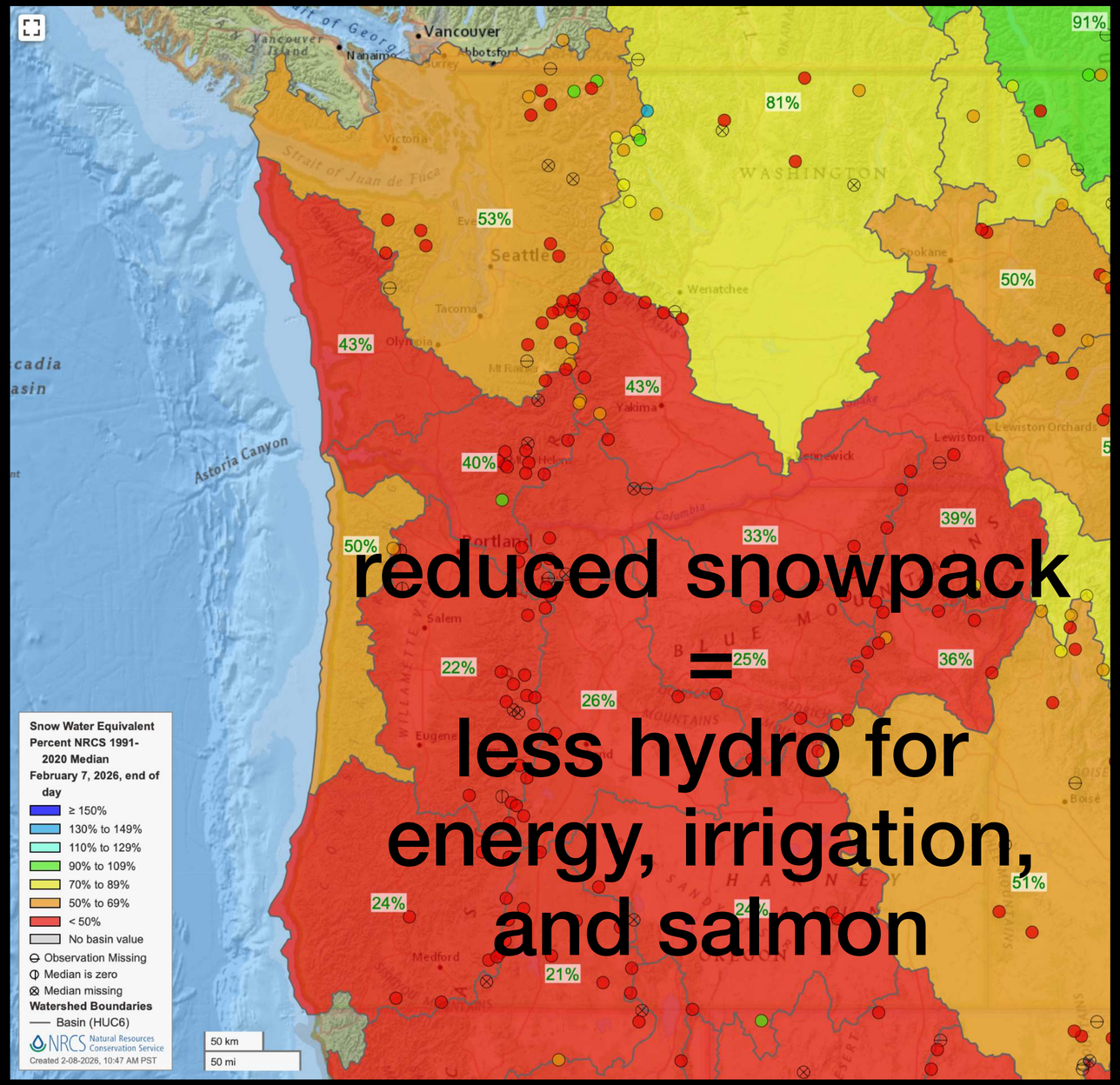
The need for renewables is accelerating

Notes

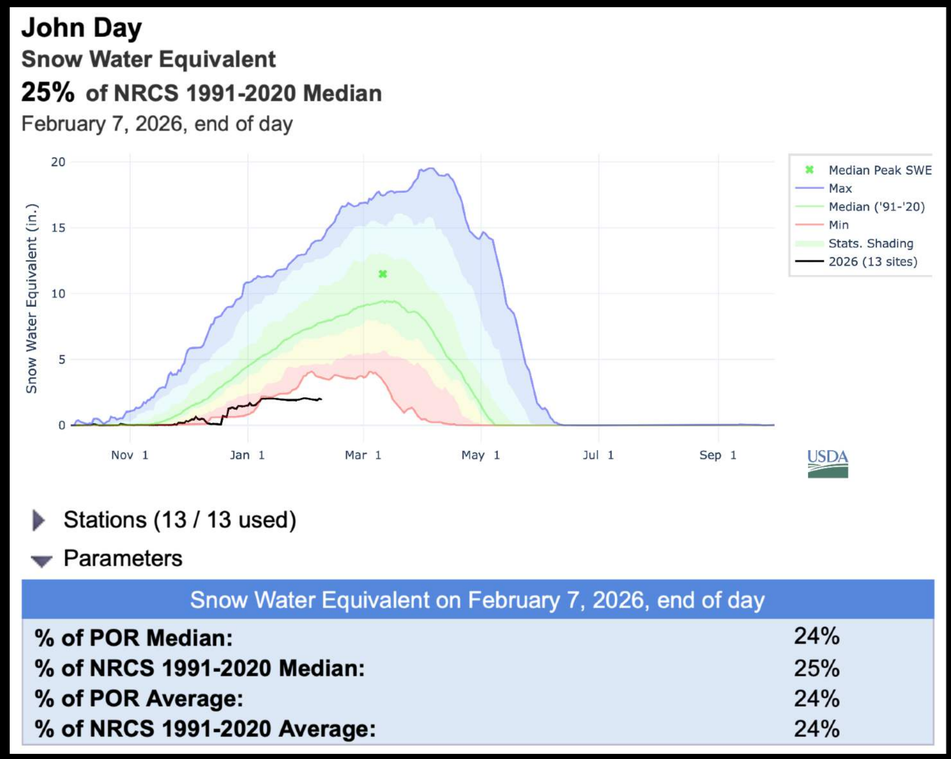
- Increased wildfire risk
- Reduce snowpack and low water year hydro capacity
- Increased heat domes which can spike mainland market power rates and loss of load probability (LoLP)

Source: NOAA, Goddard Institute for Space Studies - 6 February 2026 - Hansen, Kharecha, Morgan and Vest

Snow Water Equivalent Snapshot: 7 February 2026



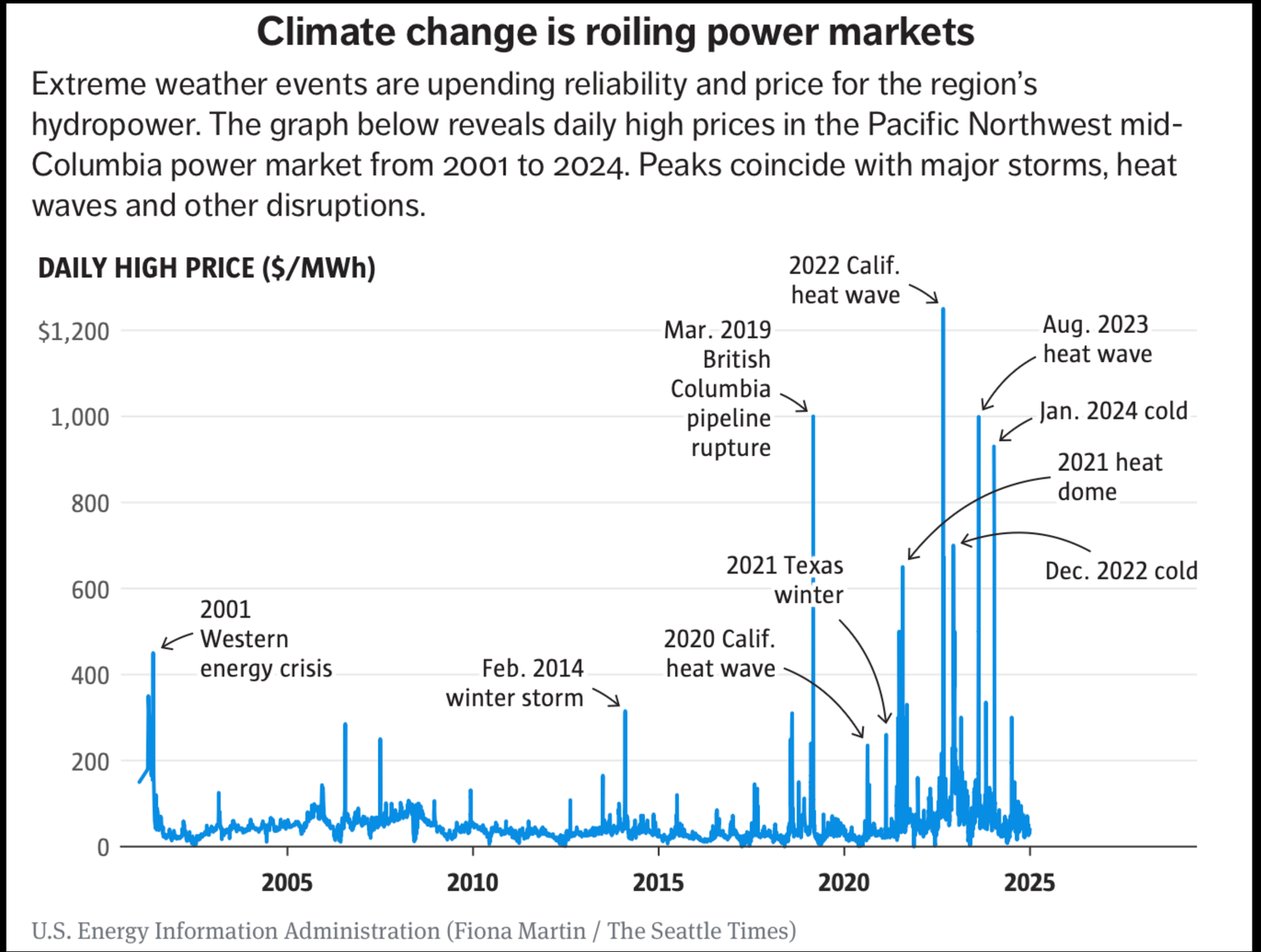
- Northwest River Forecast Center (NWRFC) and NRCS basin maps show a significant "snow drought" across much of the region
- **Washington** Approximately 82% of stations are in a snow drought. Statewide snow water equivalent (SWE) is hovering around 62% of the median, which marks this as one of the worst 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.



Source: Natural Resources Conservation Service (NRCS) Snow Water Equivalent

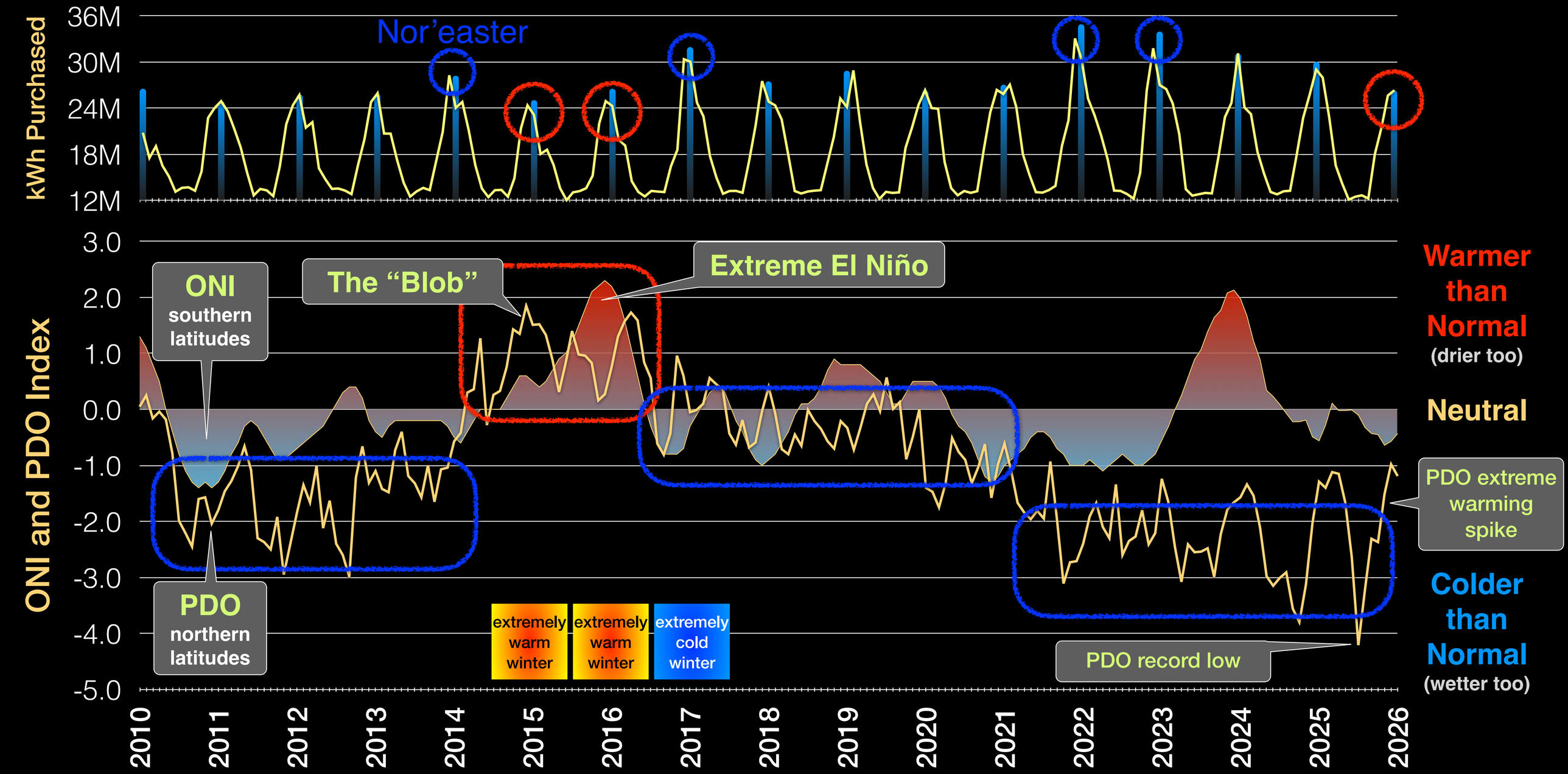
Supply-Demand Shortfall: Mid-Columbia Price History ($/MWh)

Source: EIA



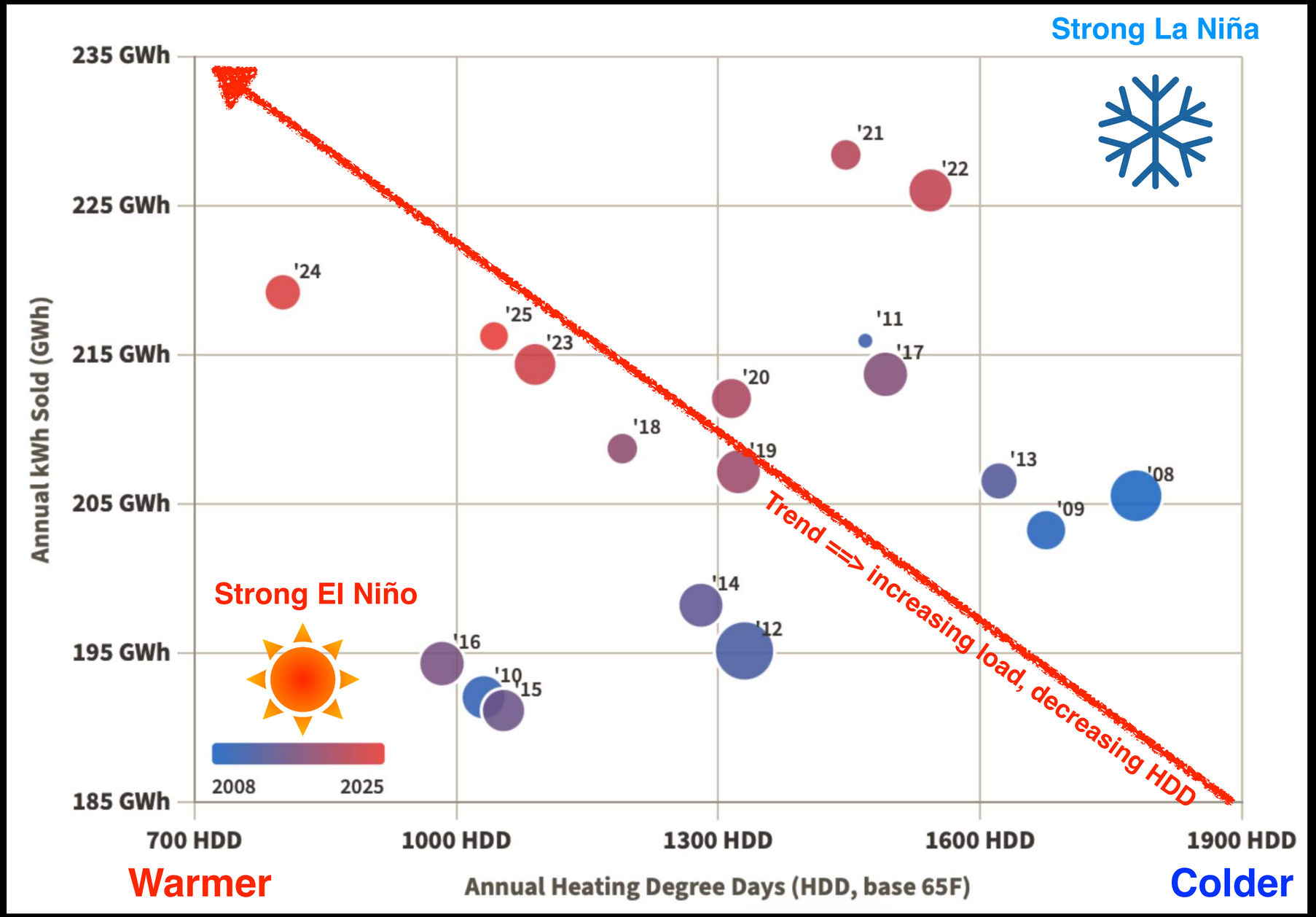
OPALCO Load 101

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



Source: NOAA

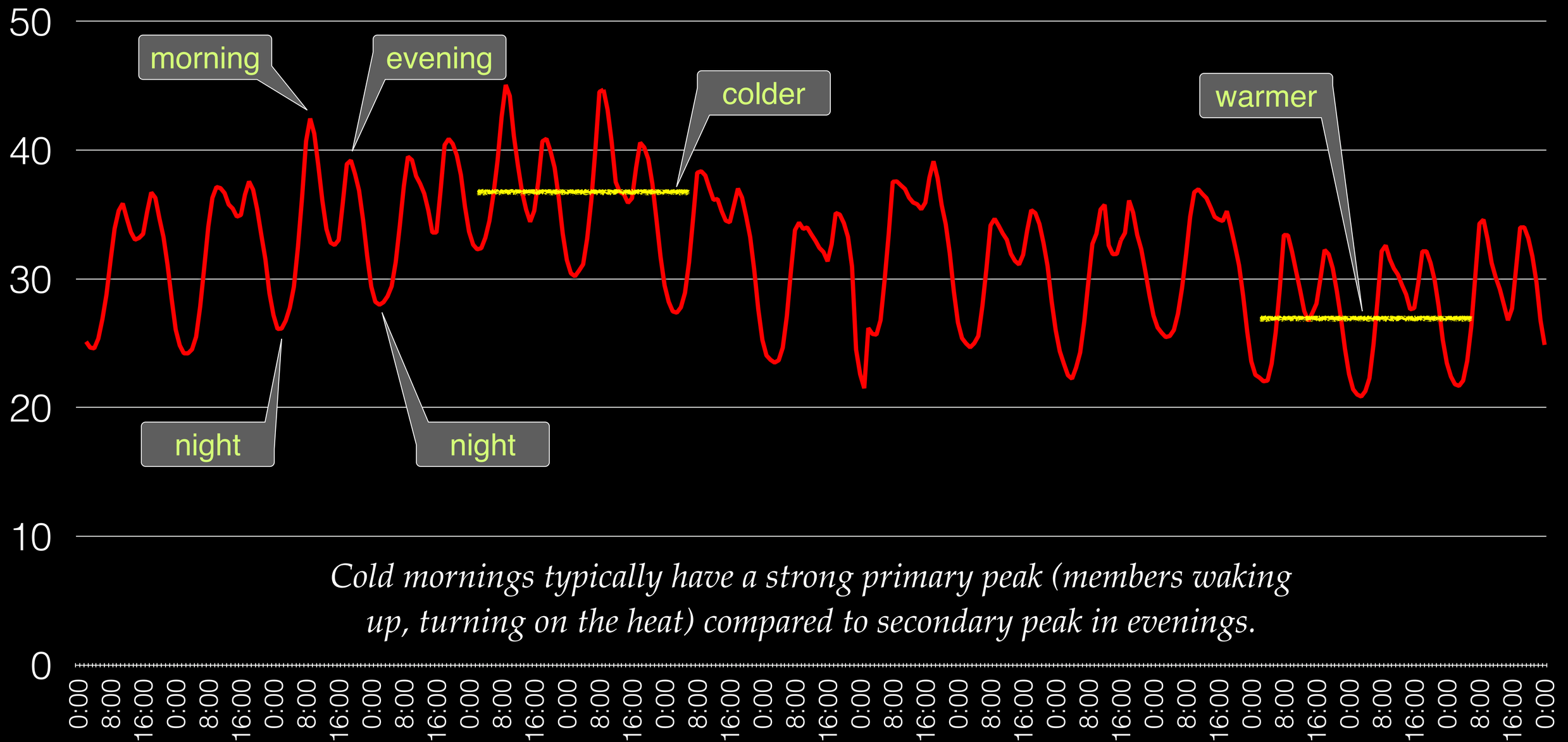
Load Trend: Despite climate warming, winter load is increasing



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%

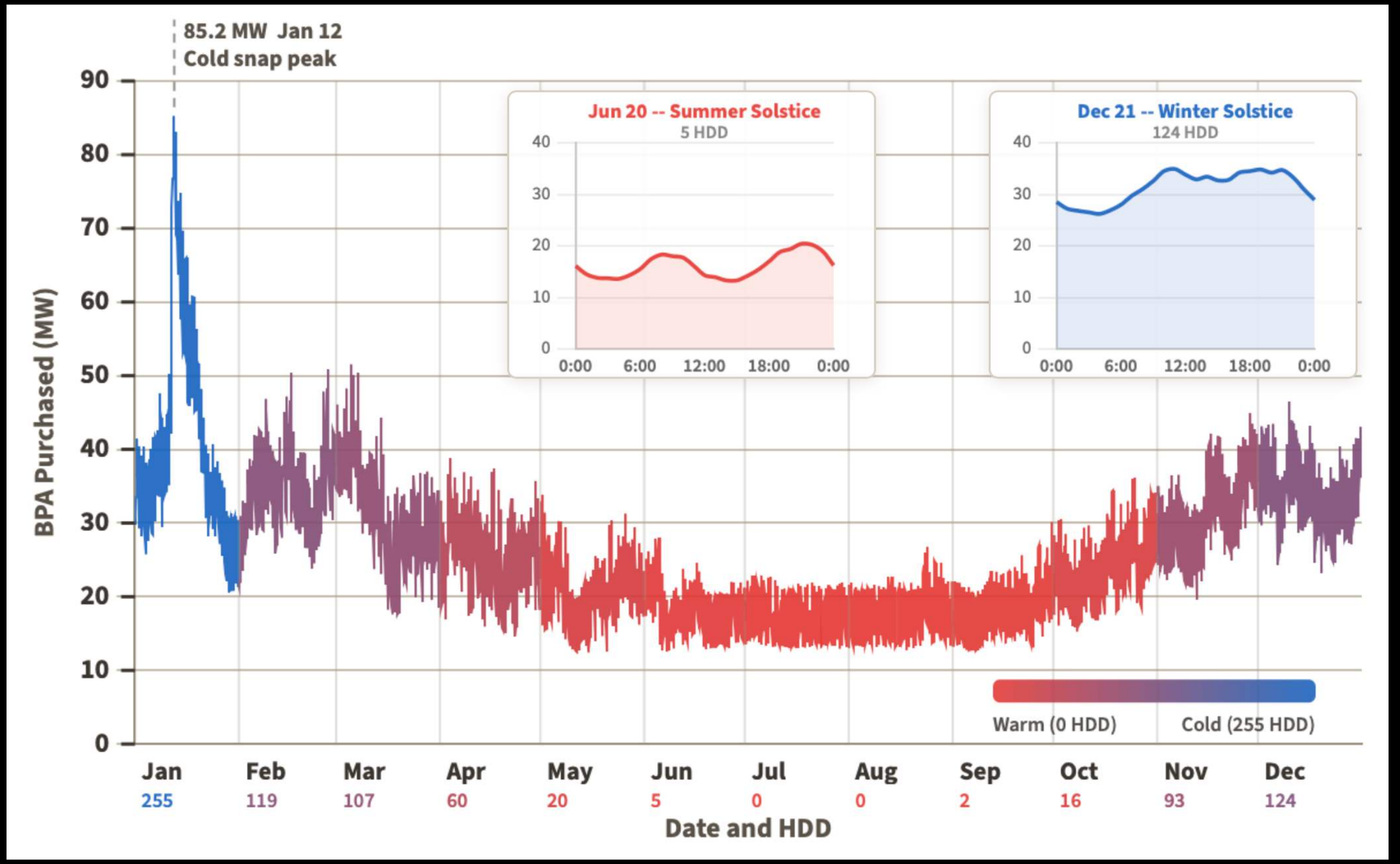
Typical OPALCO Hourly Winter System Load Example (MW)



Cold mornings typically have a strong primary peak (members waking up, turning on the heat) compared to secondary peak in evenings.

Time of Day Across 15 Days

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

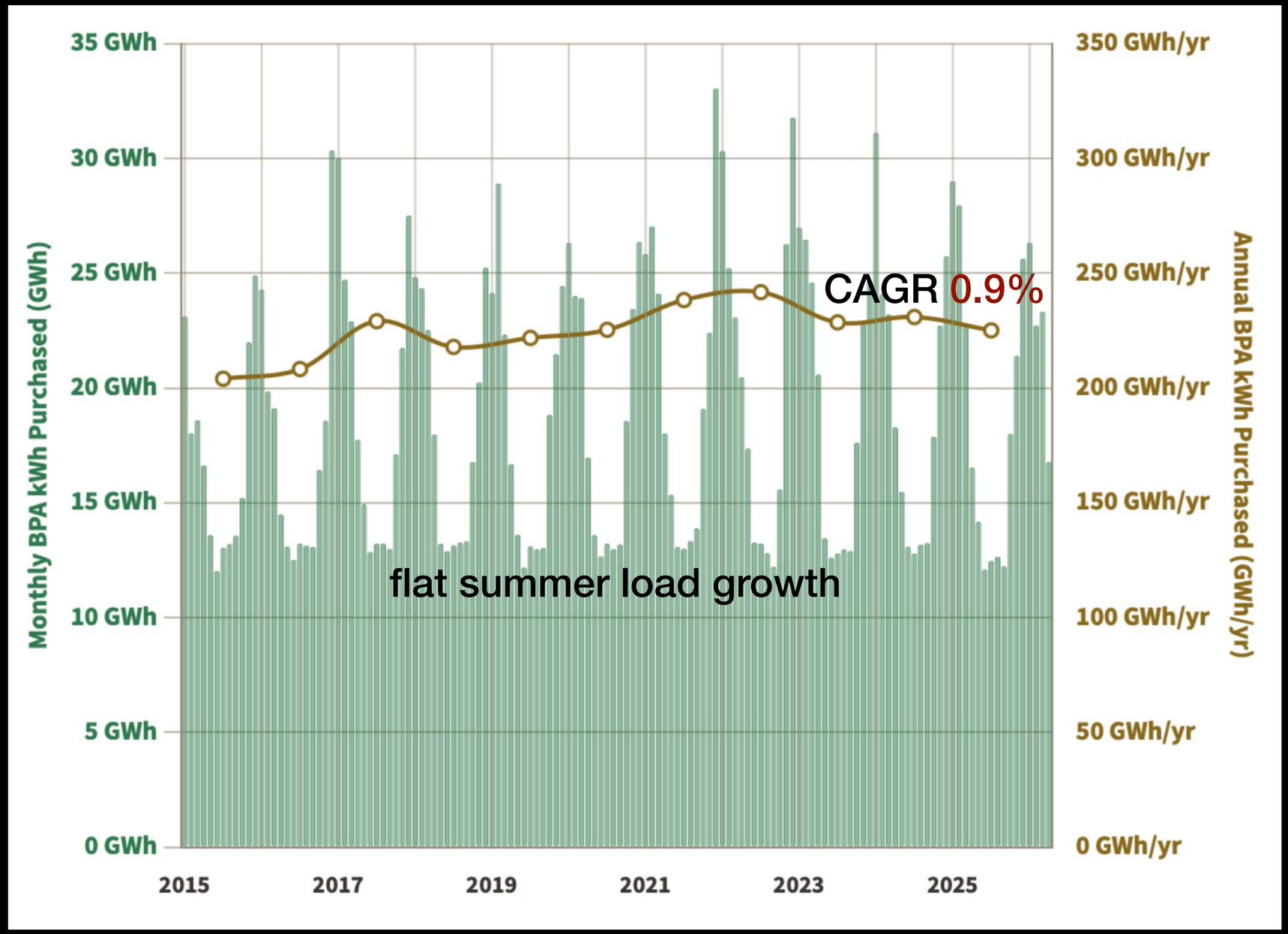


The January cold snap maxed out the NW grid.

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

Wind was at zero due to high pressure area.

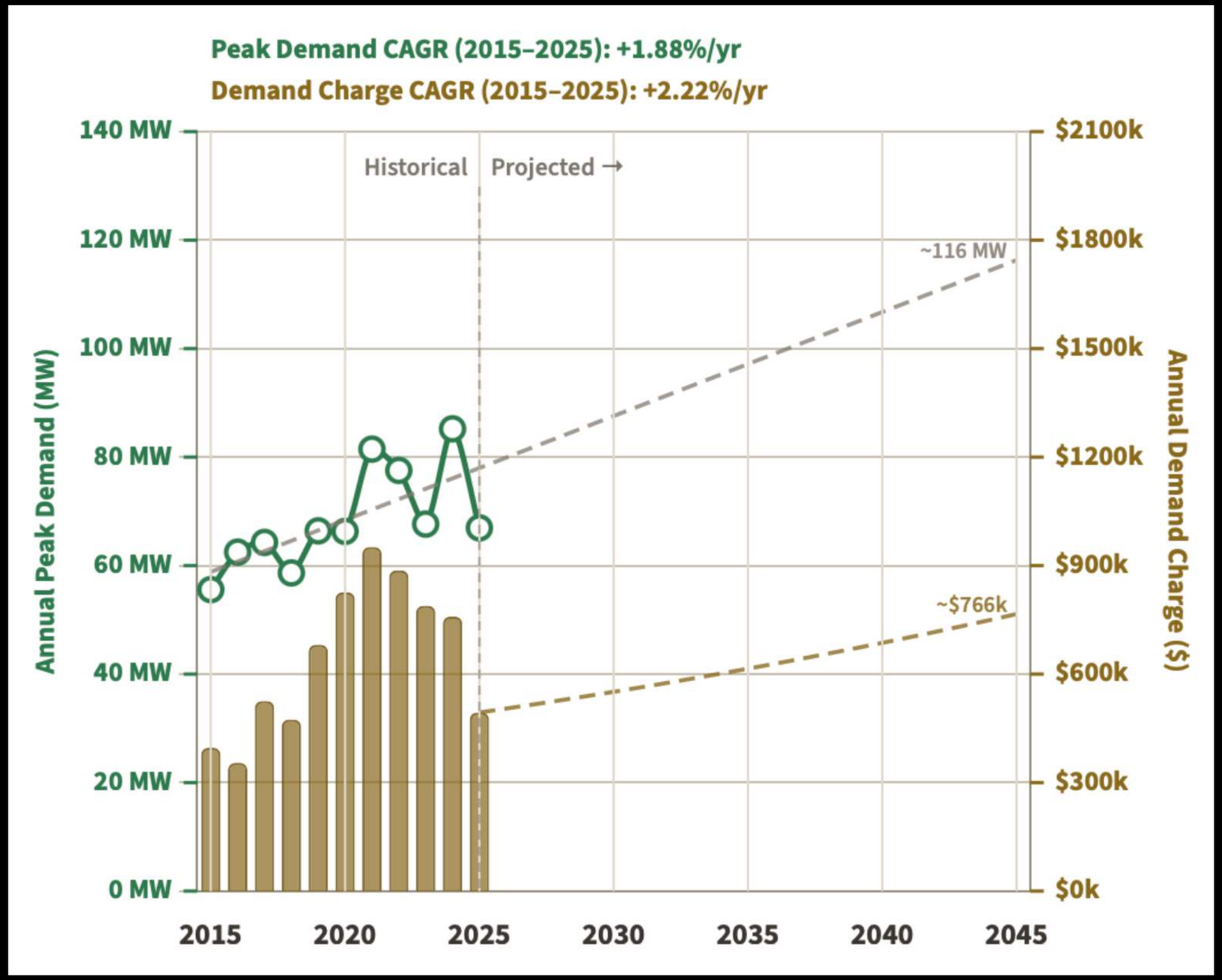
OPALCO Load: 10 Year monthly and annual load



"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

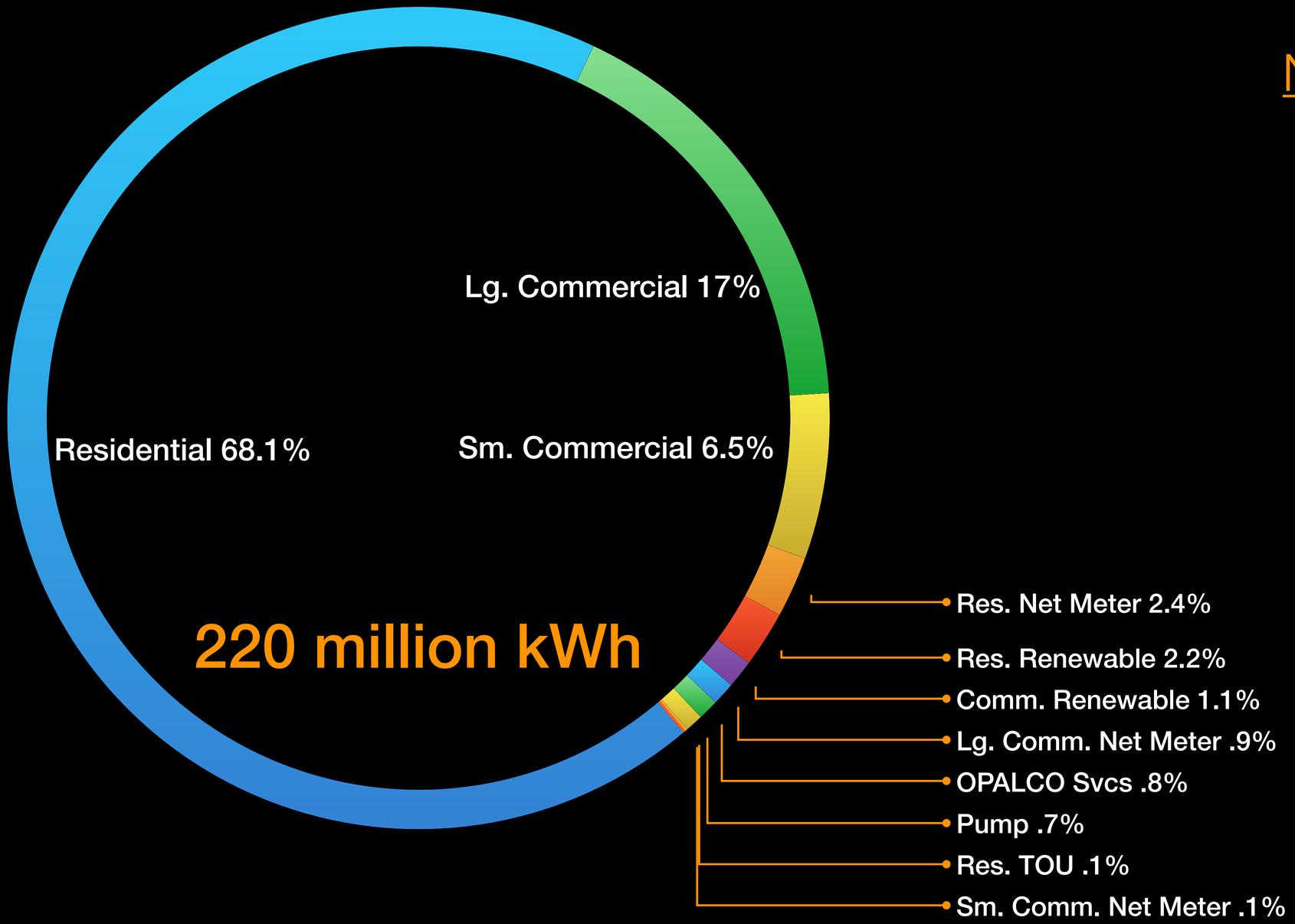


Notes

- 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

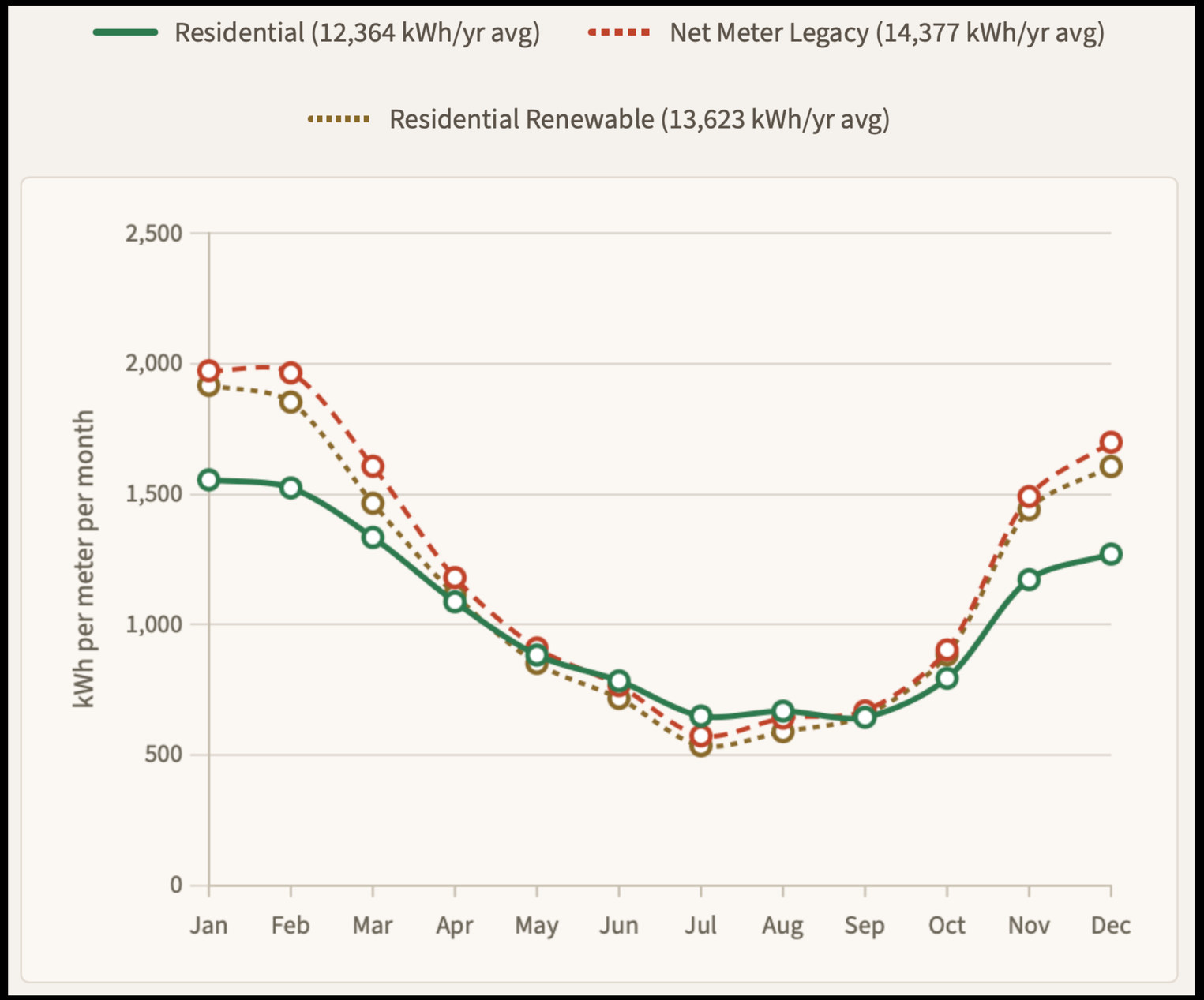
2024 Load by Rate Class



Notes

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

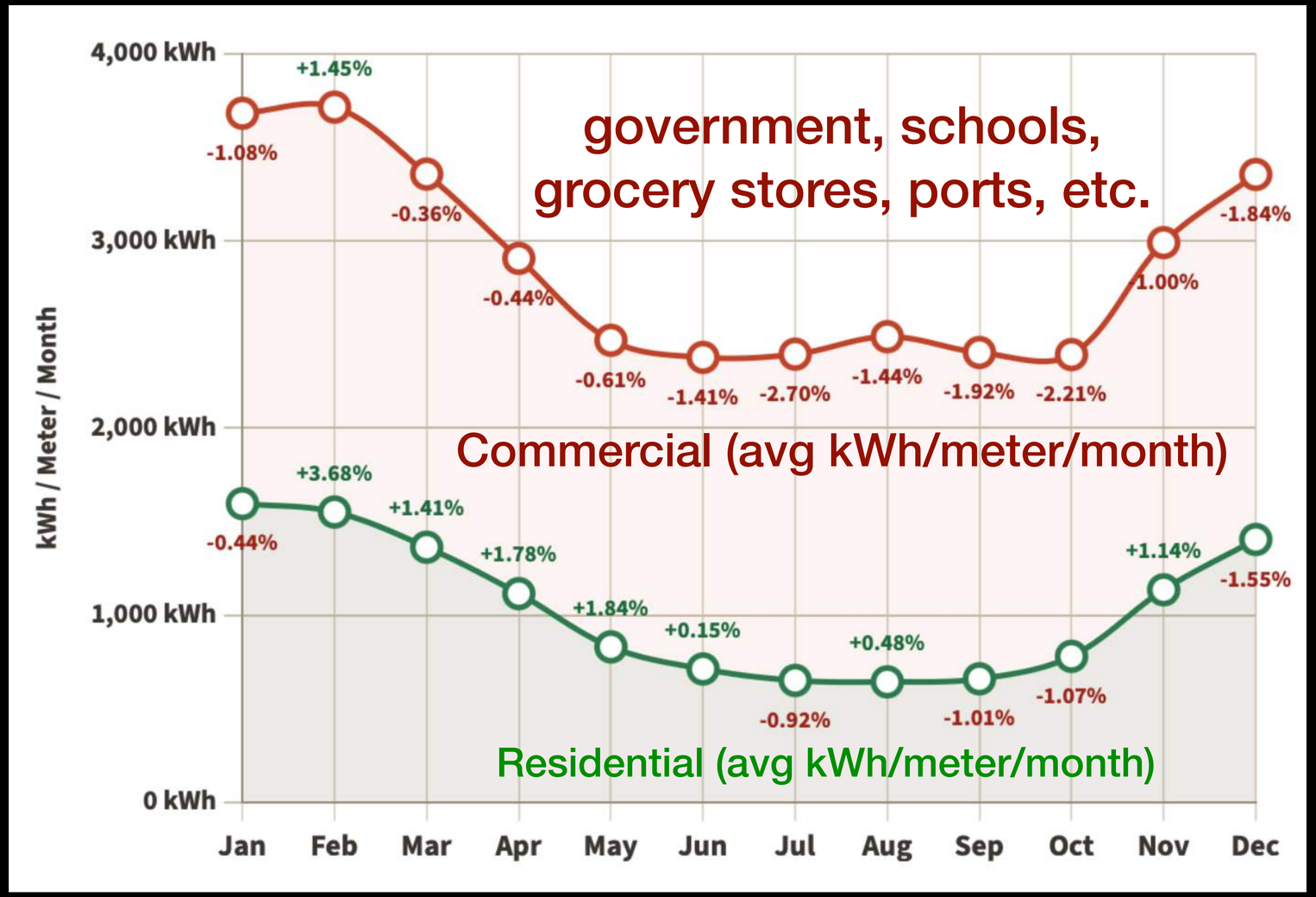
2024 Residential Sold: Average kWh per meter



"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

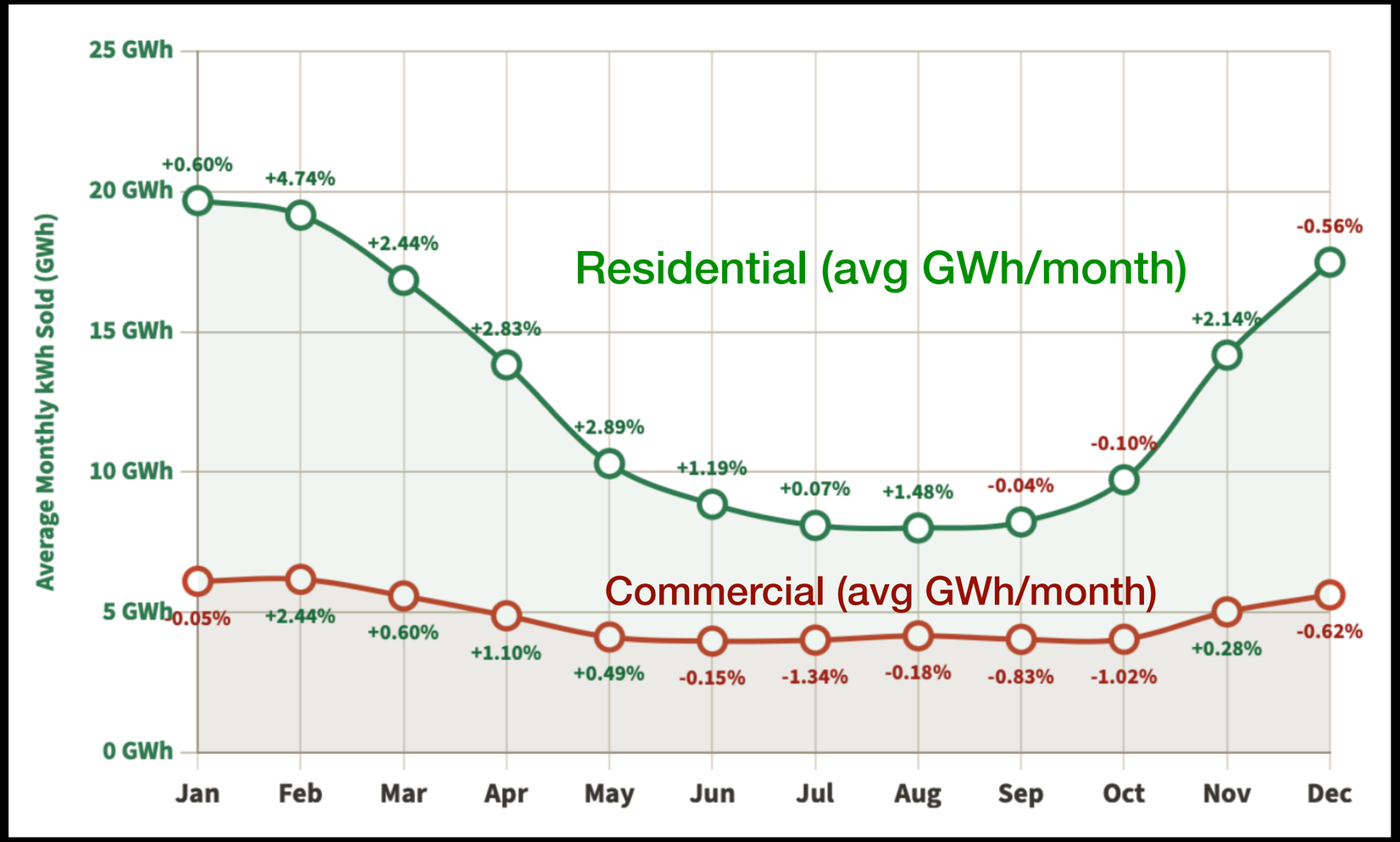


Residential, and especially commercial members, benefited from major energy efficiency programs and SIU.

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.

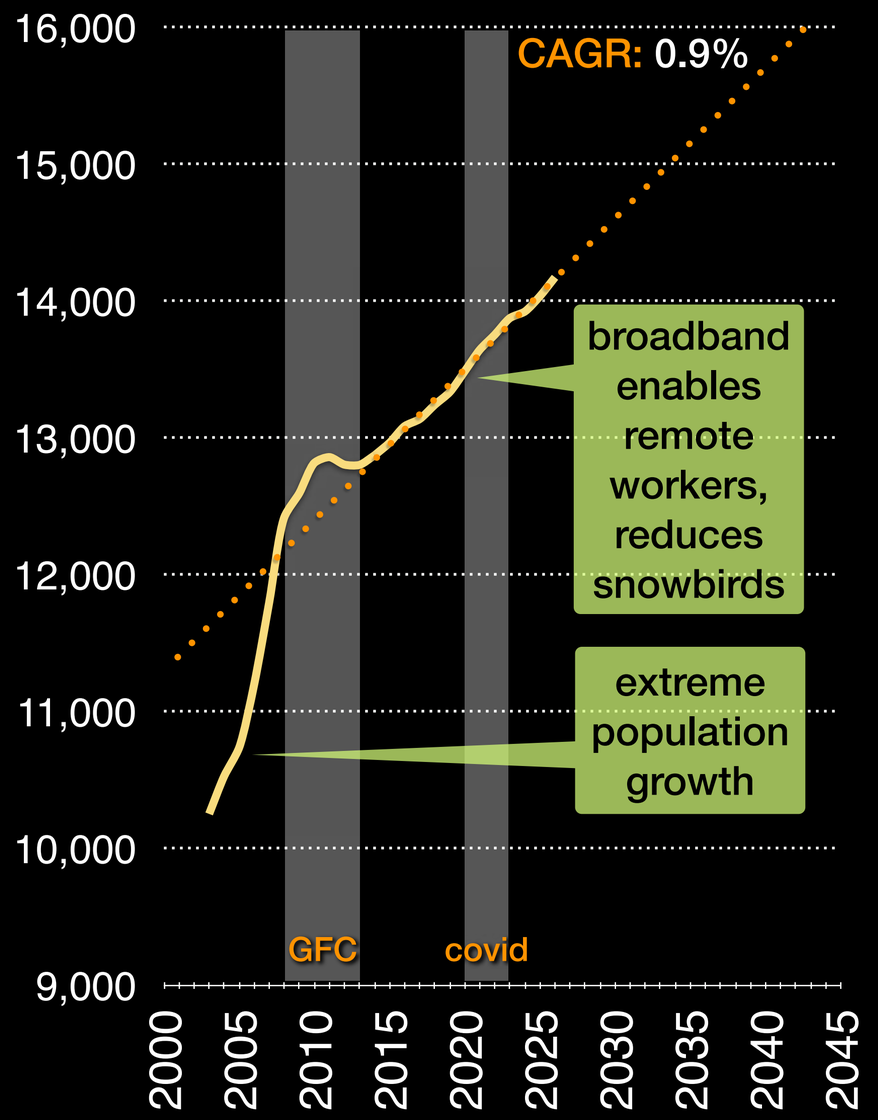
Notes

- 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.

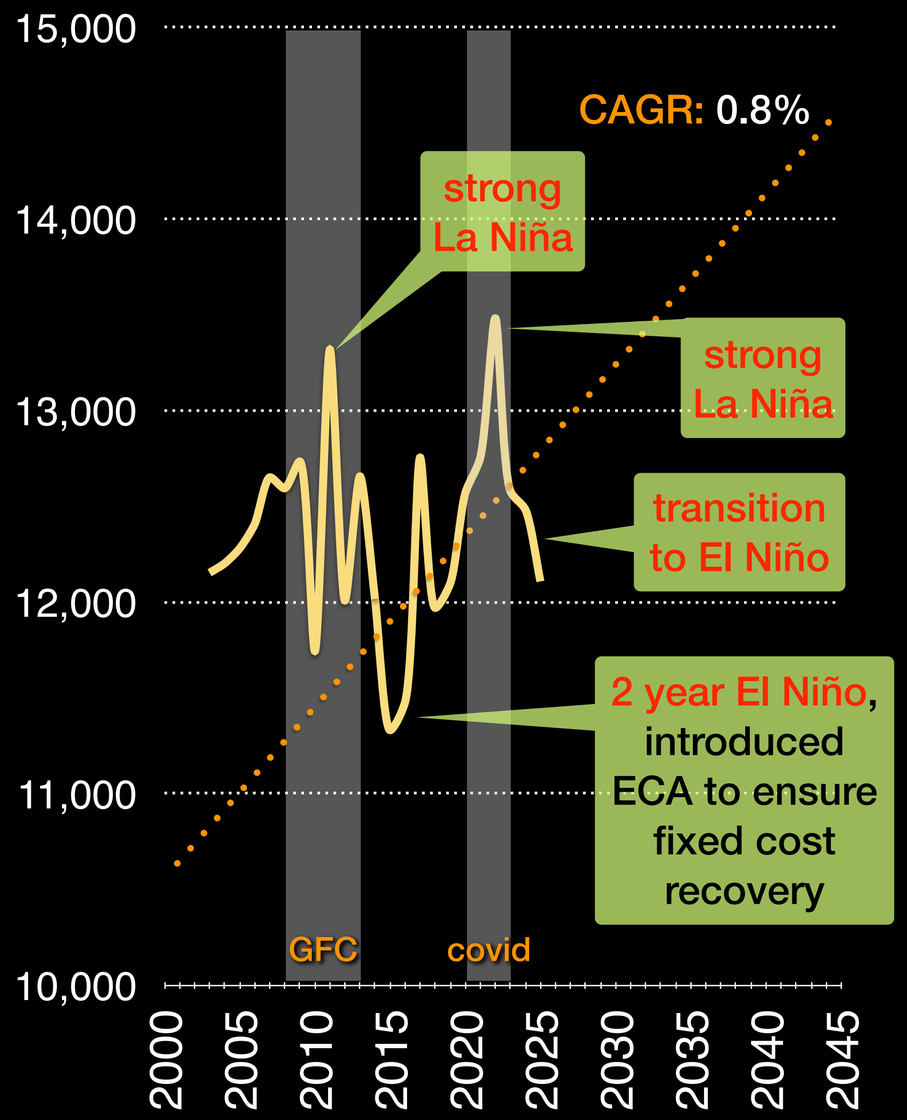
Residential Load Trends

Load is very weather dependent and driven by population growth

Residential Meters



Residential Load / Meter

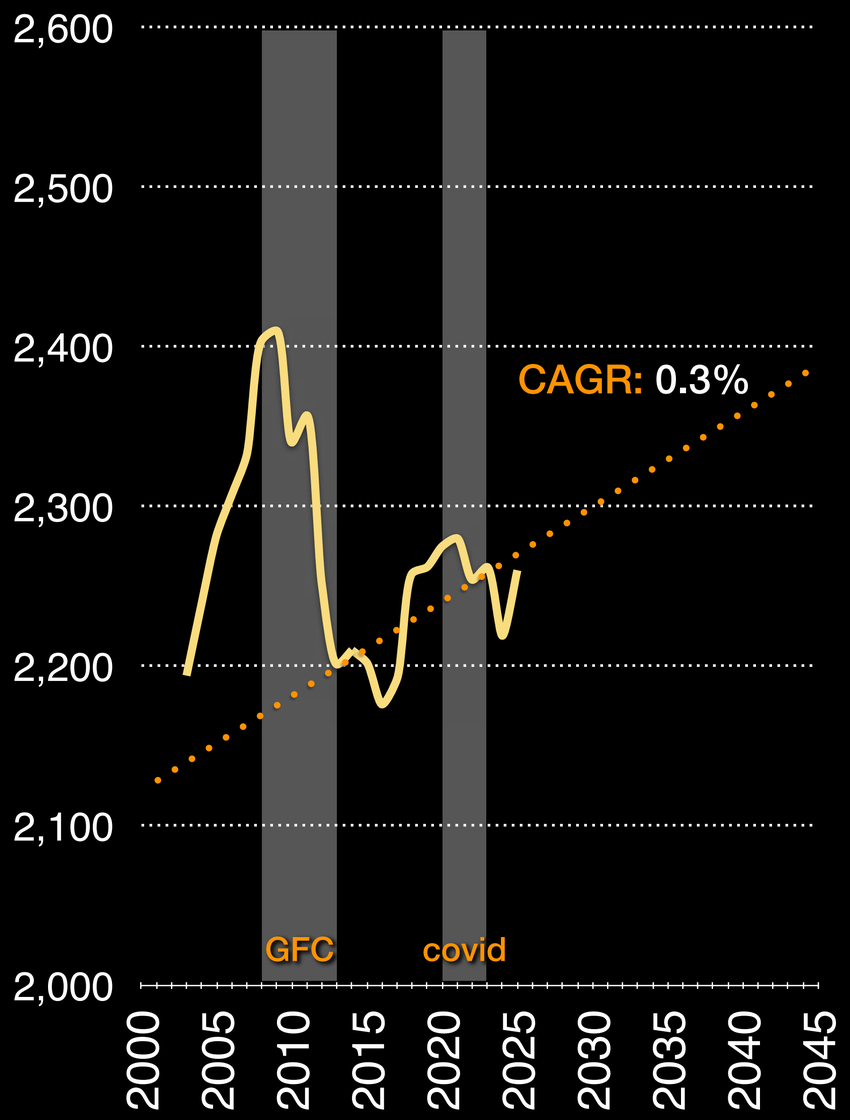


Notes

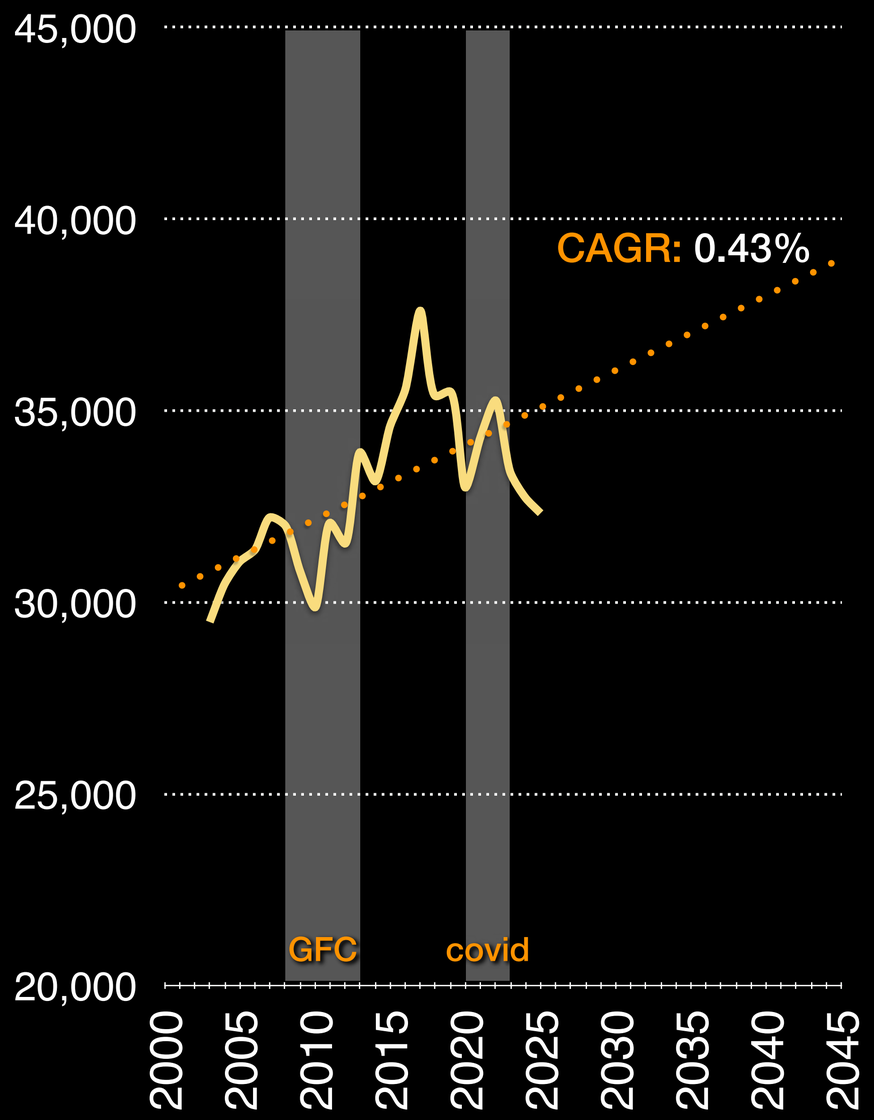
- Extreme growth from mid-1990s to 2008. From 2003 to 2008 the residential meter CAGR was 2.8%.
- The Global Financial Crisis (GFC) stopped that. Post recession, the residential meter CAGR is 0.8%.
- Residential efficiency programs tempered growth, e.g. rebates for weatherization, insulation, windows, 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



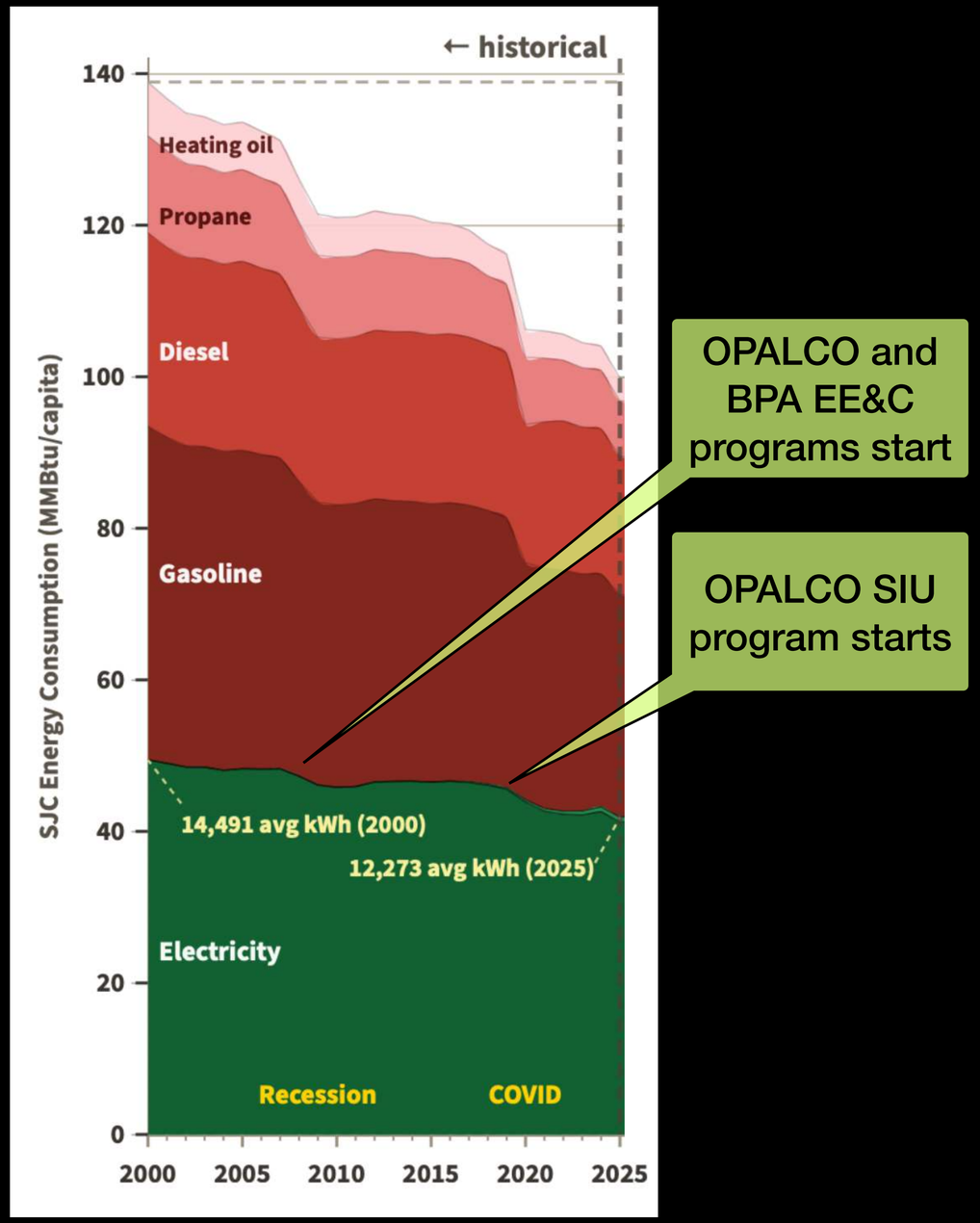
Commercial Load / Meter



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

Source: SJC GHG Inventory; WA DOT VMT, EIA SEDS, OPALCO kWh sold

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:

record year

partial

	Project Origination Year									
Measure	2019	2020	2021	2022	2023	2024	2025	2026	Grand Total	Project Count
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	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	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

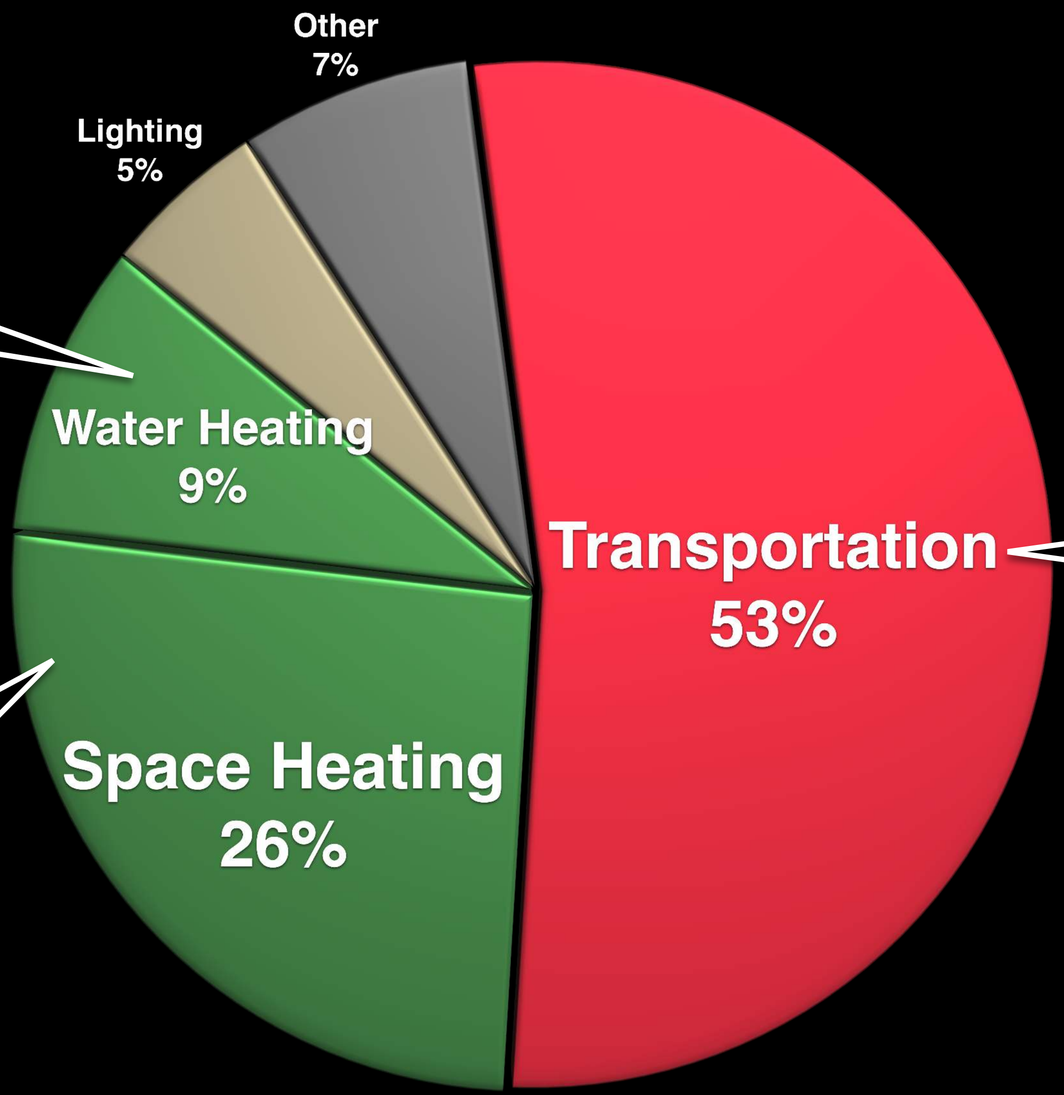
$13M

$14M

available for home, commercial, parking lots, etc.

The Next Wave of Efficiency: Electrification of heating and transportation

Home Energy Use

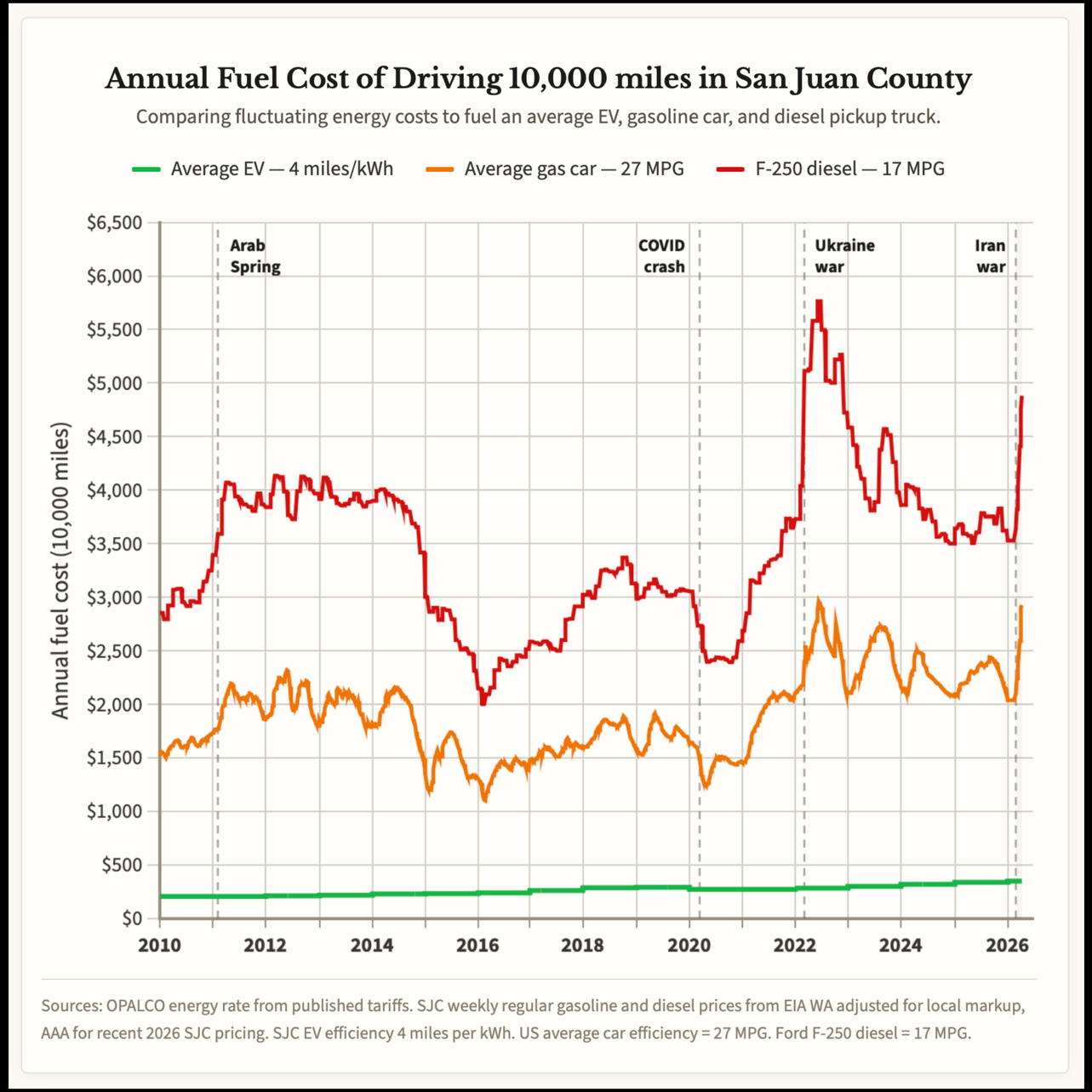


Heat pump water heaters are **3 times** more efficient than natural gas

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

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

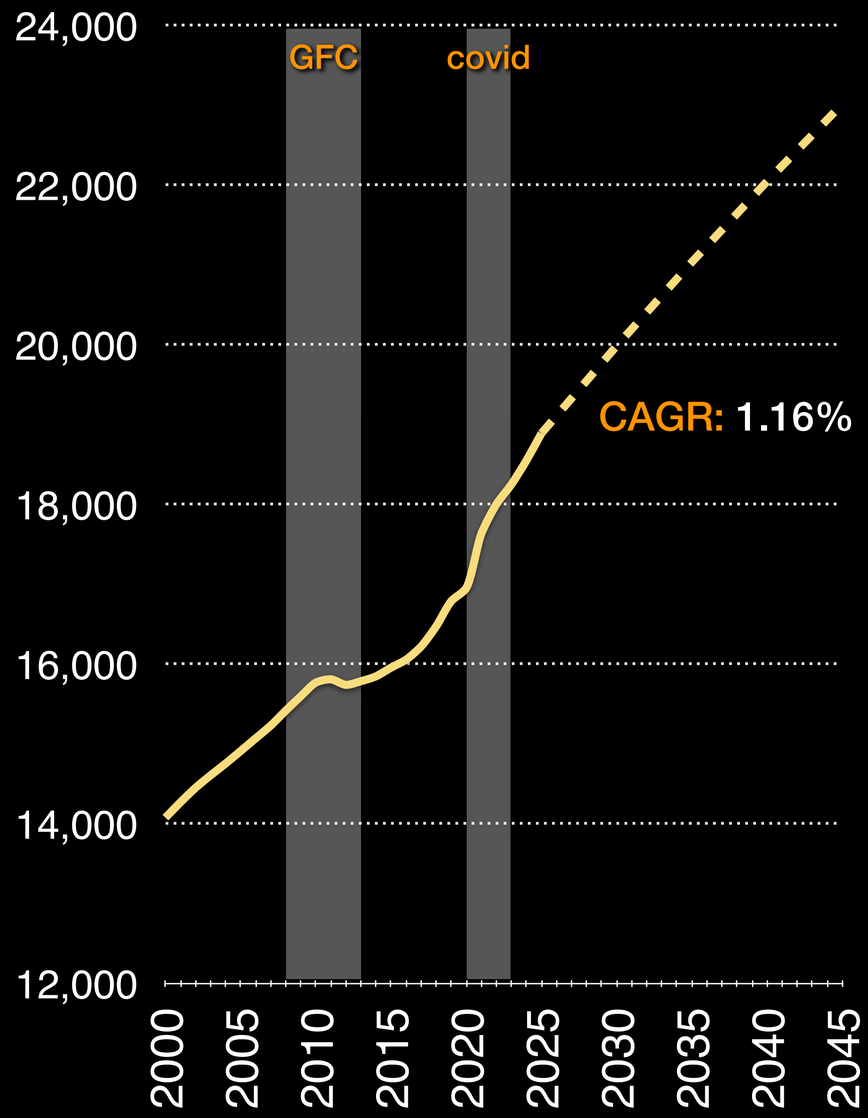
SJC Energy Consumption Per Capita: 2000 to 2045



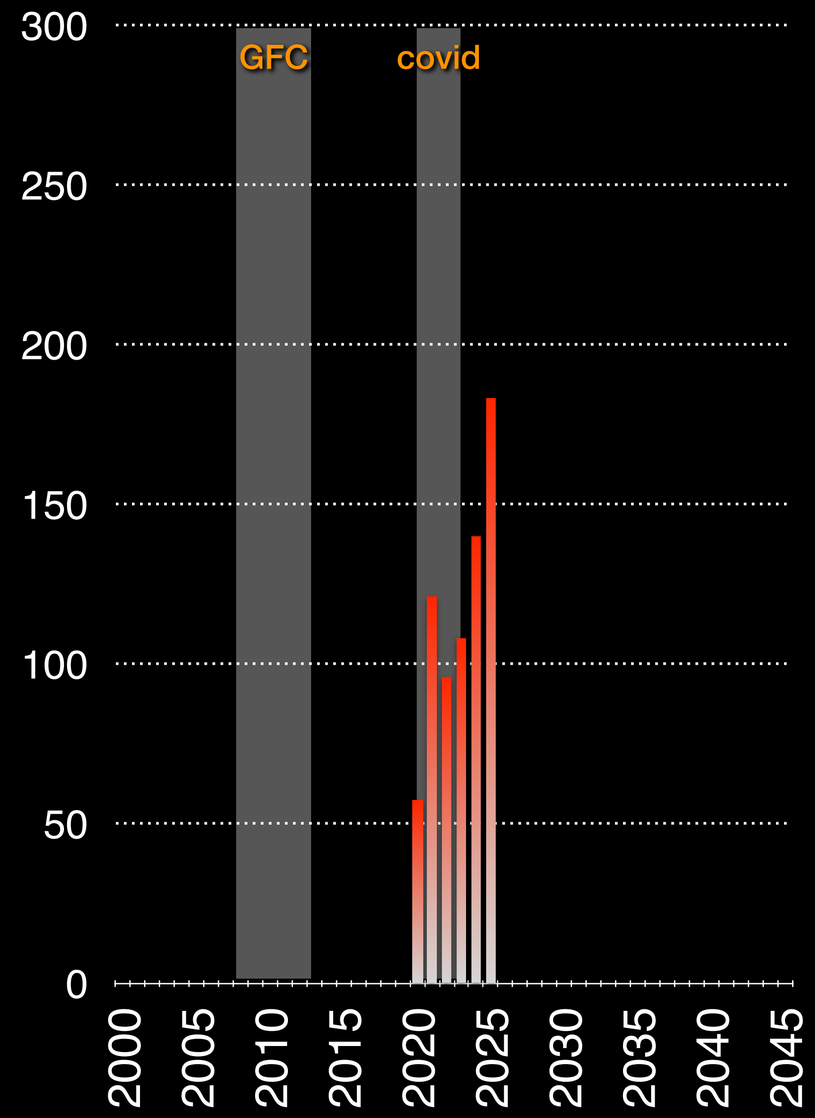
Load Forecast

Comp Plan Population and Building Trends

SJC Population



SJC Building Permits



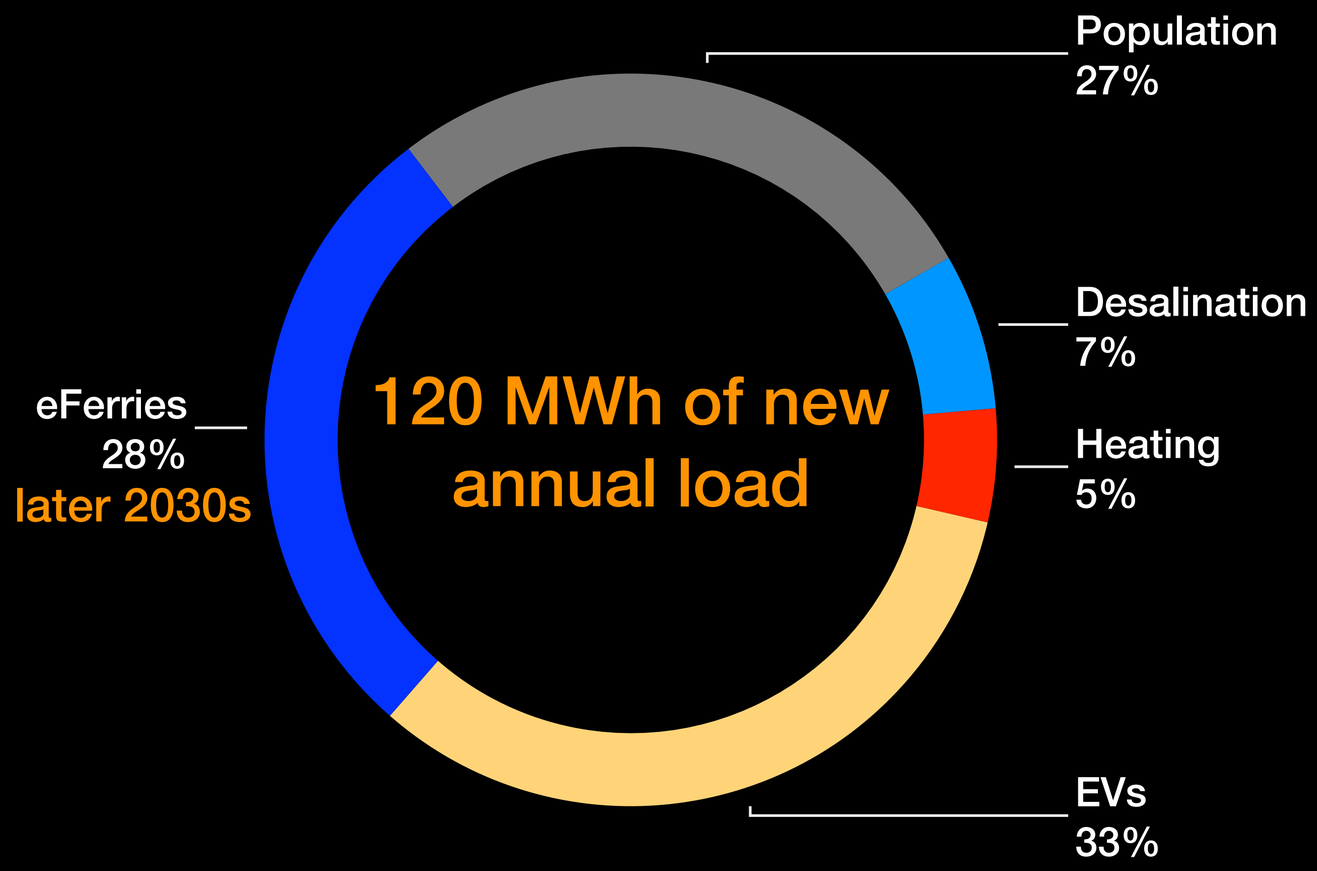
Notes

- San Juan County has selected the WA Office of Financial Management (OFM) “medium” growth projection for the 2025 - 2045, about a 1% CAGR through 2045.
- OFM also projected a “high” growth of 2.14%. OPALCO uses the the counties choice of medium growth projection for this IRP.
- Building permits are accelerating, post covid.

Source: SJC County 2025 Comprehensive Plan Update, Washington State Office of Financial Management, SJC Permit Department

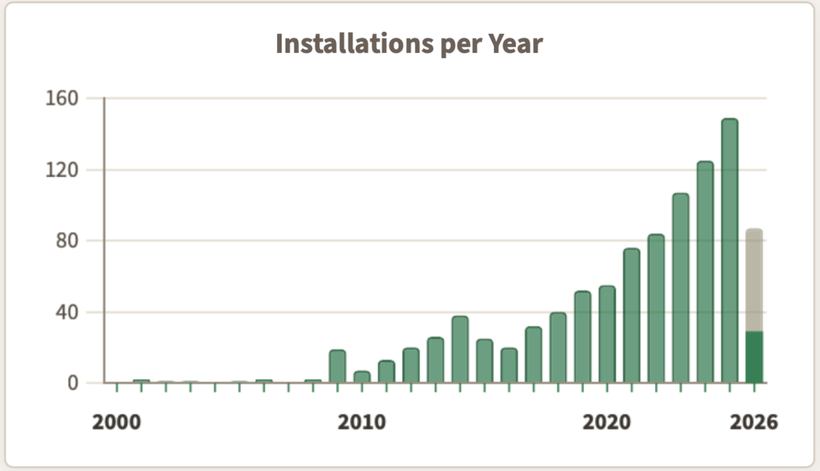
Load Forecast Modeling

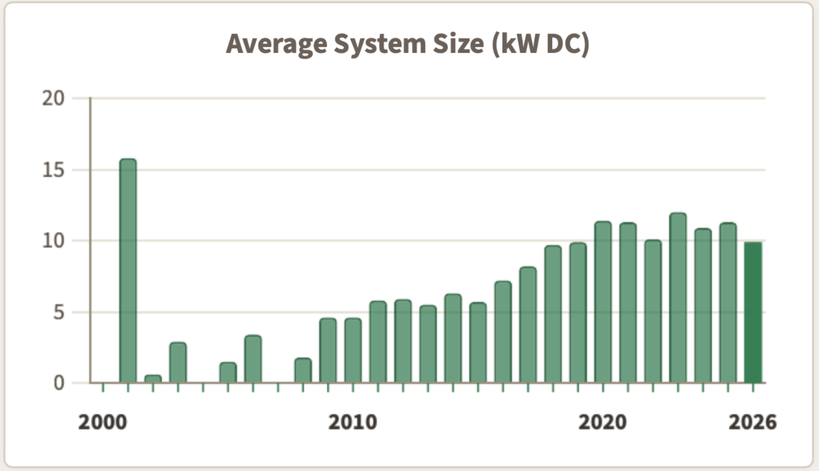
Load Driver	Unit	2025 Actual	2045 Projection	Change
Population & Households				
Resident population	*persons*	**18,895**	**~23,016**	+4,121 (+22%)
Total OPALCO meters	*meters*	**16,090**	**~20,700**	+4,610 (+29%)
Residential meters	*meters*	**14,900**	**~19,200**	+4,300 (+29%)
Commercial meters	*meters*	**1,190**	**~1,500**	+310 (+26%)
Avg household size	*persons/HH*	**2.2**	**~2.1**	-0 (-5%)
Electric Vehicles & Transportation				
Battery EVs (BEV)	*vehicles*	**967**	**~11,200**	+10,233 (+1058%)
Plug-in Hybrids (PHEV)	*vehicles*	**286**	**~2,800**	+2,514 (+879%)
Total EV + PHEV	*vehicles*	**1,253**	**~14,000**	+12,747 (+1017%)
Gasoline/diesel vehicles (ICE)	*vehicles*	**18,745**	**~2,200**	-16,545 (-88%)
EV fleet annual load	*GWh/yr*	**3.7**	**~42.0**	+38.3 (+1,035%)
Heating & Appliances				
Heat pump space heaters	*units*	**1,800**	**~6,200**	+4,400 (+244%)
Heat pump water heaters	*units*	**600**	**~2,800**	+2,200 (+367%)
Resistance space heaters	*units*	**4,200**	**~1,800**	-2,400 (-57%)
Resistance water heaters	*units*	**3,800**	**~1,400**	-2,400 (-63%)
Fossil space heaters	*units*	**3,400**	**~400**	-3,000 (-88%)
Fossil water heaters	*units*	**2,100**	**~200**	-1,900 (-90%)
HP load: fossil to HP	*GWh/yr*	**1**	**~5.8**	+5 (+867%)
HP savings: resistance to HP	*GWh/yr*	**-0.8**	**-10.8**	-10.0
eFerry Electrification				
Electrified ferry terminals	*terminals*	**0**	**3**	+3
eFerry annual load	*GWh/yr*	**0**	**~32.9**	+33
eFerry coincident peak	*MW*	**0**	**~45**	+45 MW
Desalination				
Desalination capacity	*GPD*	**60,000**	**~500,000**	+440,000 (+733%)
Desalination annual load	*GWh/yr*	**0.3**	**~8.0**	+7.7 (+2,567%)
Rooftop Solar				
Rooftop solar installations	*systems*	**1,000**	**~1,800**	+800 (+80%)
Rooftop solar capacity	*MW DC*	**10.8**	**18**	+7 (+67%)
Rooftop solar generation	*GWh/yr*	**10.2**	**14**	+4 (+37%)
Rooftop solar % of load	*% of load*	**4.7%**	**~4.0%**	-0.7 pp
Total System Load				
Total OPALCO kWh Sold	*GWh/yr*	**216**	**~350**	+134 (+62%)
Annual peak demand (winter)	*MW*	**67**	**~116**	+49 (+73%)
Cold snap peak (Jan event)	*MW*	**85**	**110+**	--

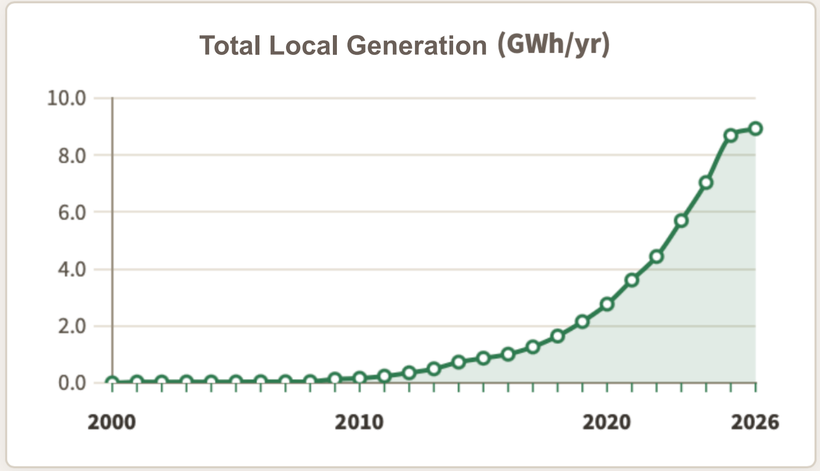


OPALCO Local Member Solar Trends

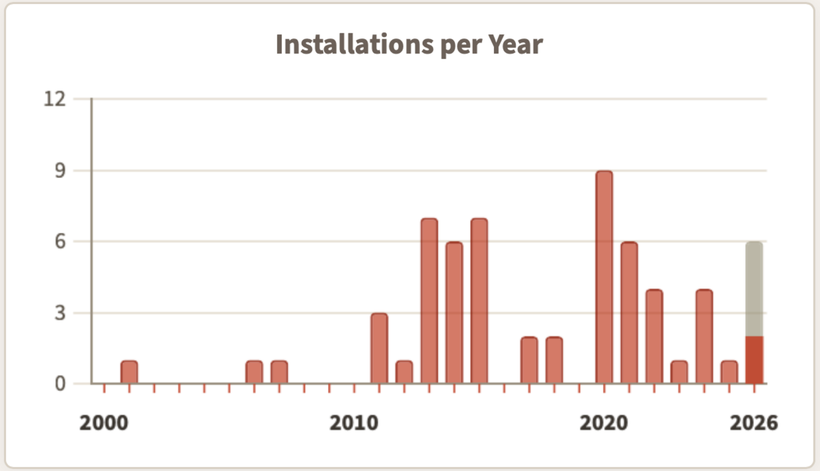
Residential

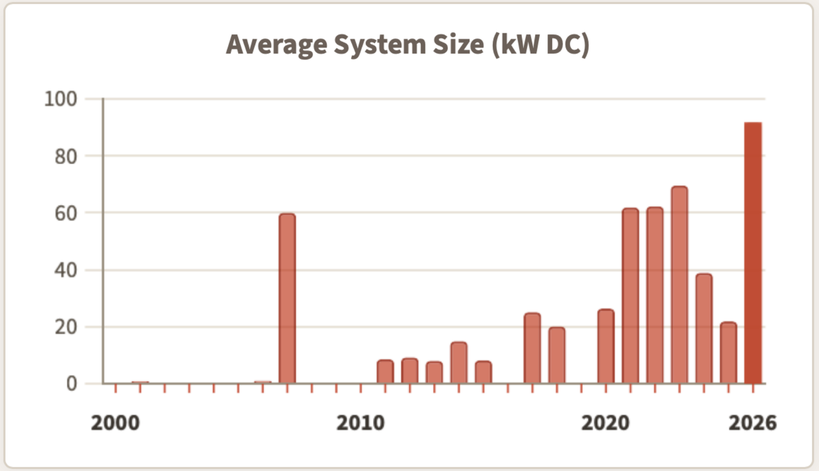


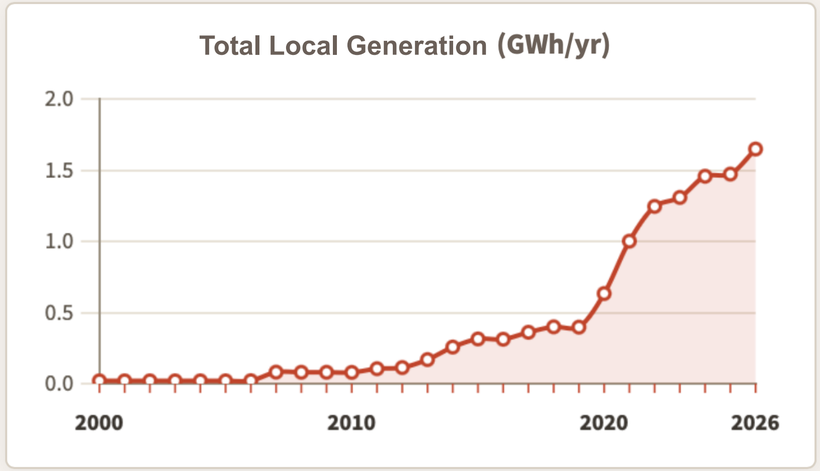




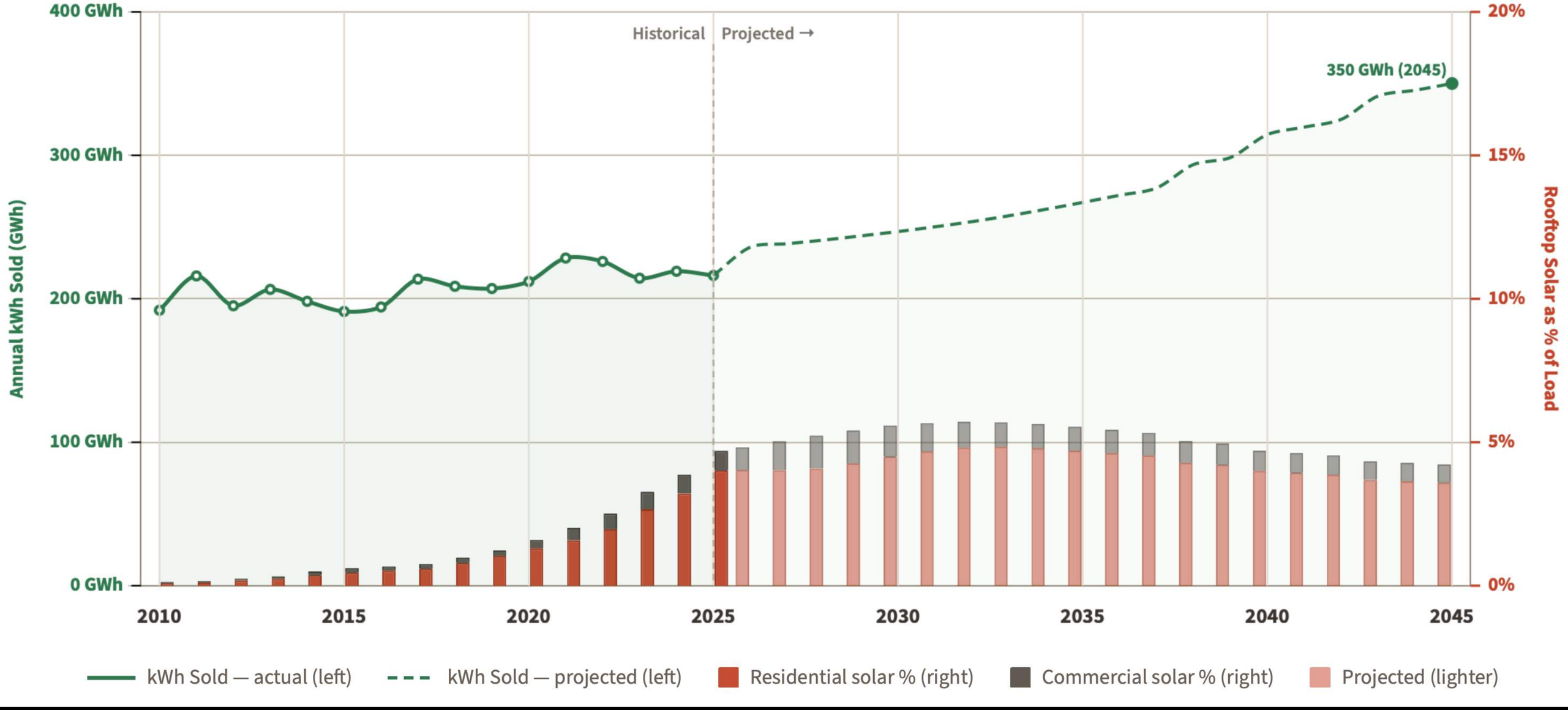
Commercial



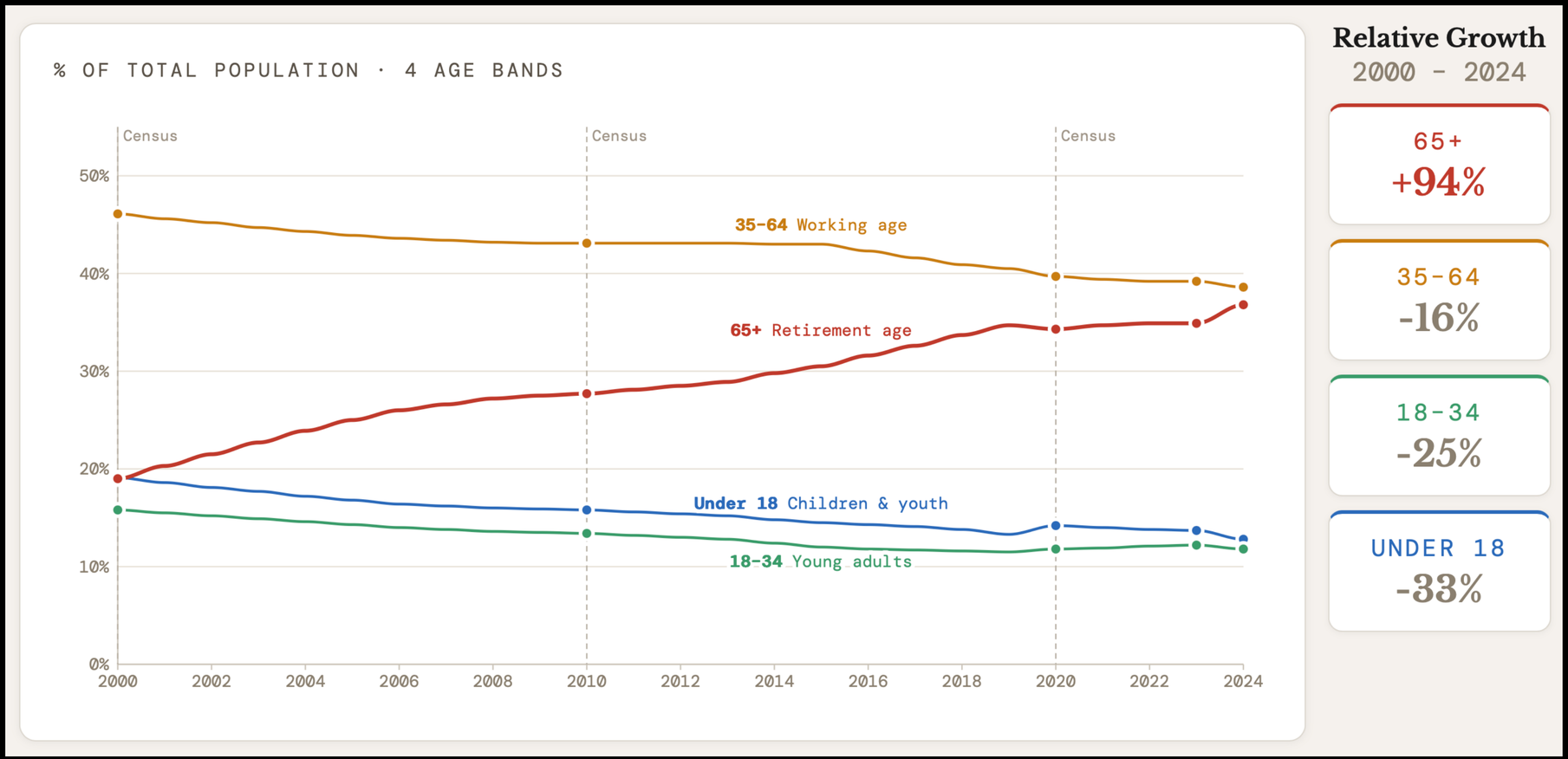




Annual kWh Sold & Member Generation as % of Load



A Quarter Century of County Demographic Shift

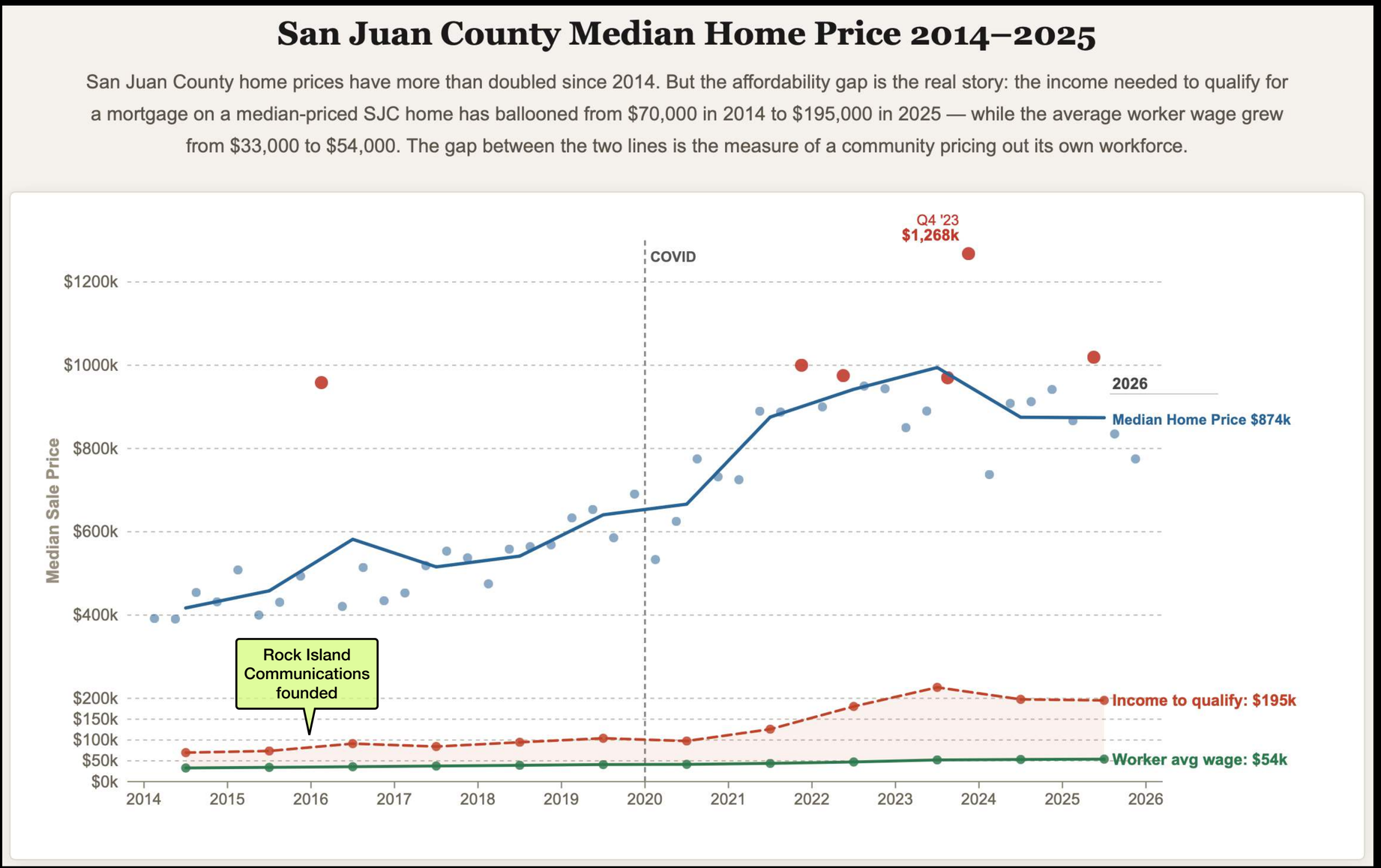


Notes

- Four age bands as % of total
- 65+ cohort has doubled since 2000
- Working-age and youth shares have fallen
- The 18 to 34 cohort, prime working age is smallest and most compressed.

Source: SJC; Decennial Census, ACS, OFM 2000 - 2024

County Housing Affordability Has Outpaced the Working Class

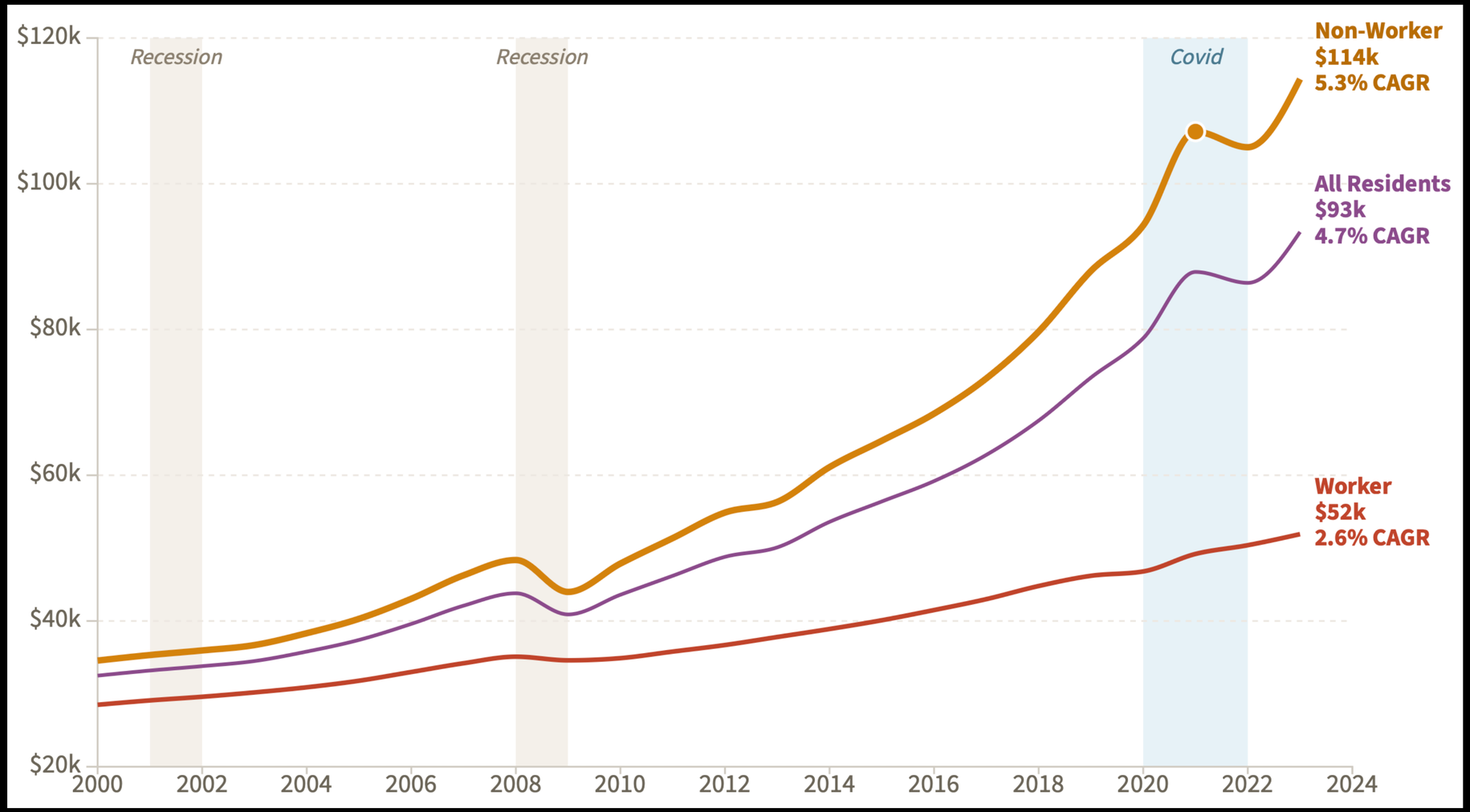


Notes

- Higher income households use more energy
- Shortage of affordable worker housing
- OPALCO cost of living adjusted wages help attract and hold mainland professionals

Source: BLS QCEW, UW WCRER

County Worker COL driven by High-Income Non-workers

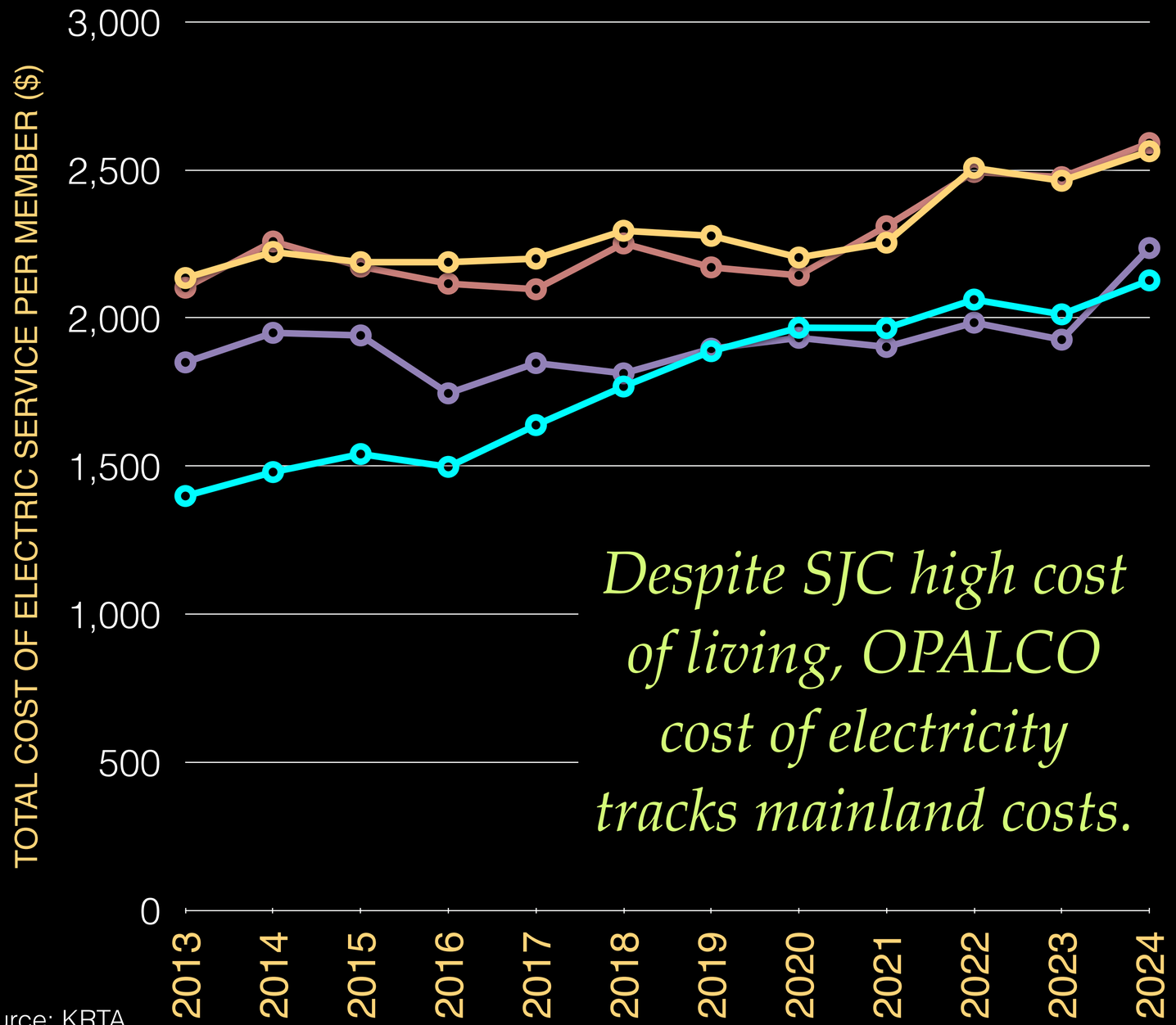


Notes

- High income households drive high cost of living COL in the county.
- About 4 in 10 SJC residents are working adults, and of those, 64% earn less than $50,000.
- The remaining 6 in 10 are either children or non-working adults (retirees, investors, second-home owners) whose average income is ~$160k — more than triple the median worker wage.

Source: U.S. Census Bureau ACS; WA ESD; UW QCEW; BLS OEWS SJC occupational percentiles; BEA Regional Economic Accounts

KRTA Comparable's: Total Cost of Electric Service Per Member (KRTA #107)



Despite SJC high cost of living, OPALCO cost of electricity tracks mainland costs.

Source: KRTA

Notes

- This is the average annual electric bill per member. OPALCO's average member bill is lower than typical US and Peer co-op bills, and comparable to mainland WA co-ops.
- Inline with our mission, we keep the cost of service as low as possible for our members - despite more complex island grid, OPALCO service costs less than our mainland counterparts.
- Source notes: US median, WA median, Size median (similar to OPALCO total members)

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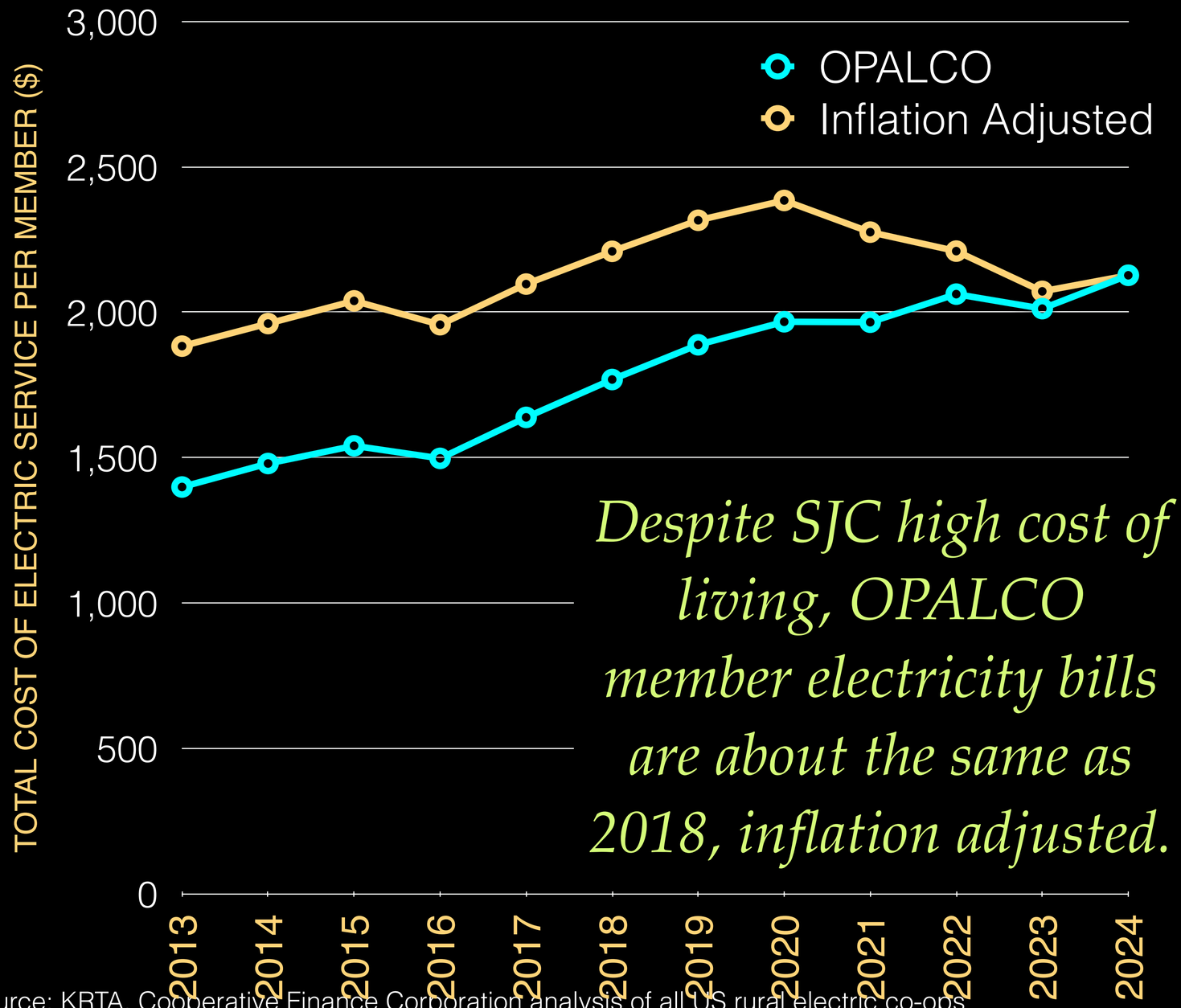

Despite SJC high cost of living, OPALCO member electricity bills are about the same as 2018, inflation adjusted.

Source: KRTA, Cooperative Finance Corporation analysis of all US rural electric co-ops

Notes

- This is the average annual electric bill per member. OPALCO's average member bill is lower than typical US and Peer co-op bills, and comparable to mainland WA co-ops.
- Inline with our mission, we keep the cost of service as low as possible for our members - despite more complex island grid, OPALCO service costs less than our mainland counterparts.
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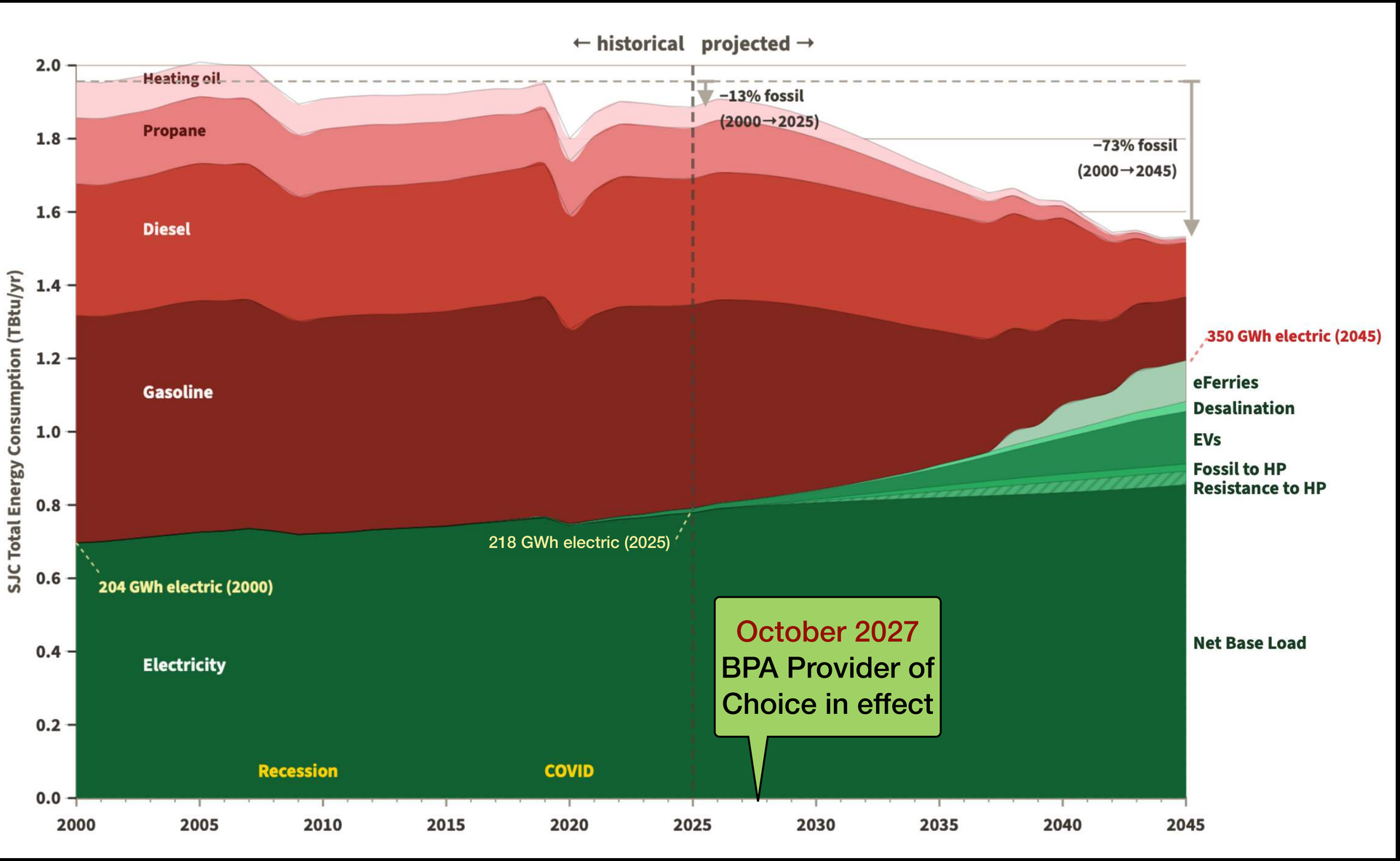
Forecast SJC Energy Consumption (kWh sold): 2026 to 2045

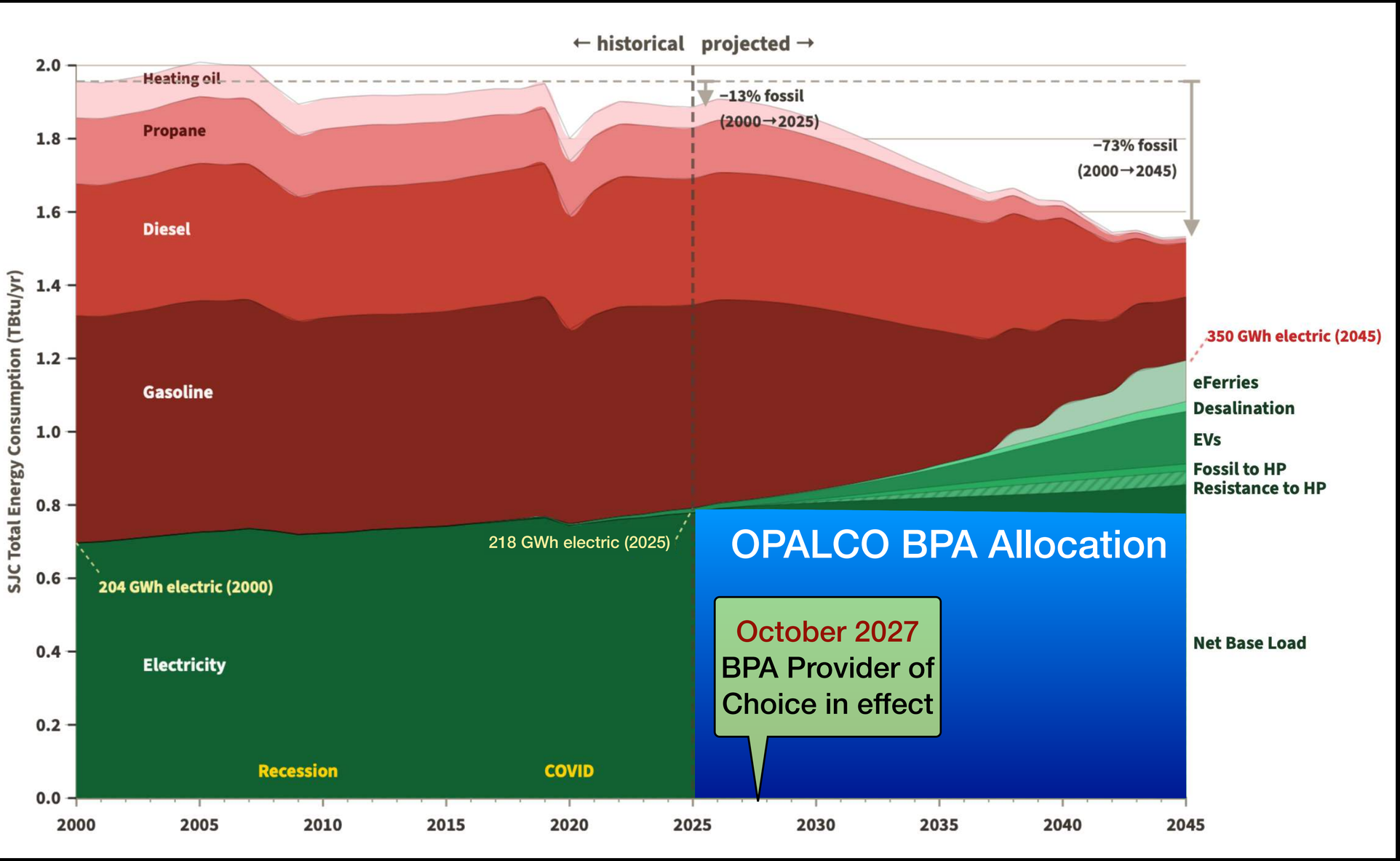


Mirroring state clean energy strategy: use electricity to stop burning fossil fuels

Notes

- 51% increase in electric energy consumption
- Driven by population growth, electrification of heating & transportation, and desalination
- 69% reduction of fossil fuel imports and associated pollution

Forecast SJC Energy Consumption (kWh sold): 2026 to 2045



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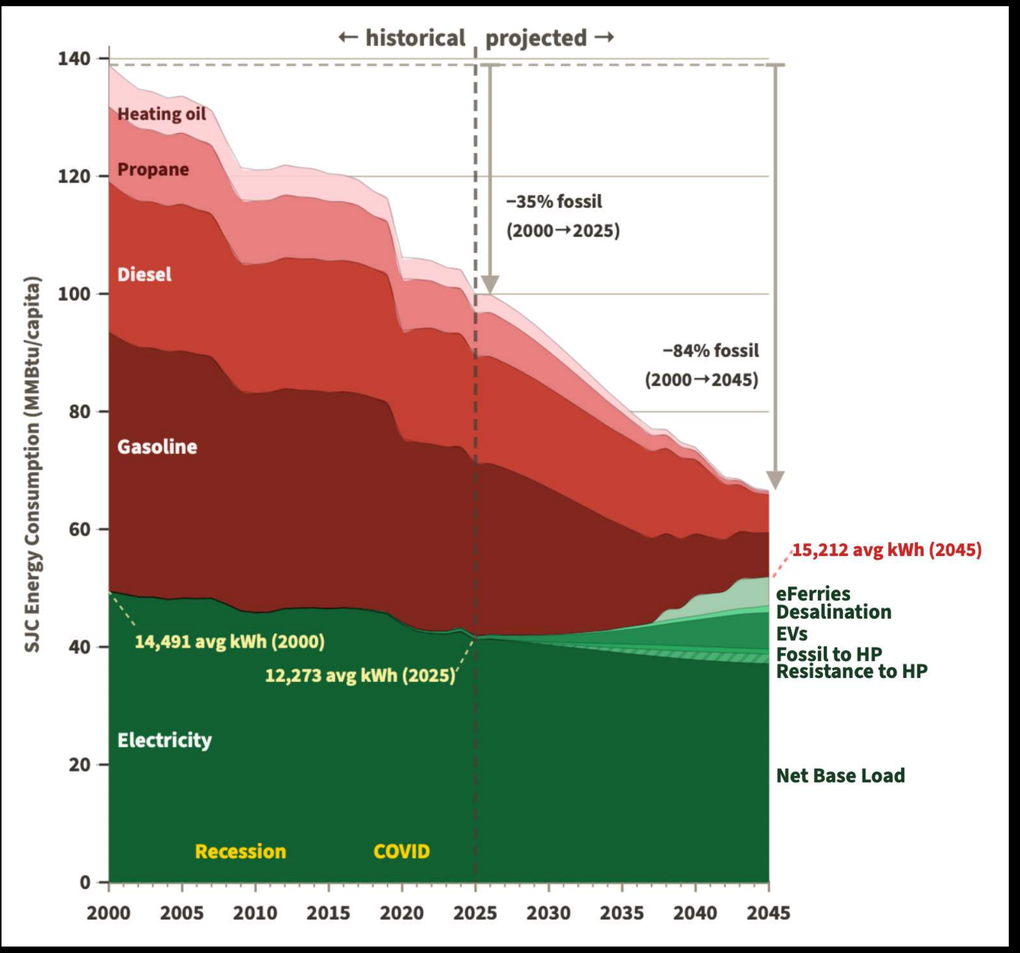
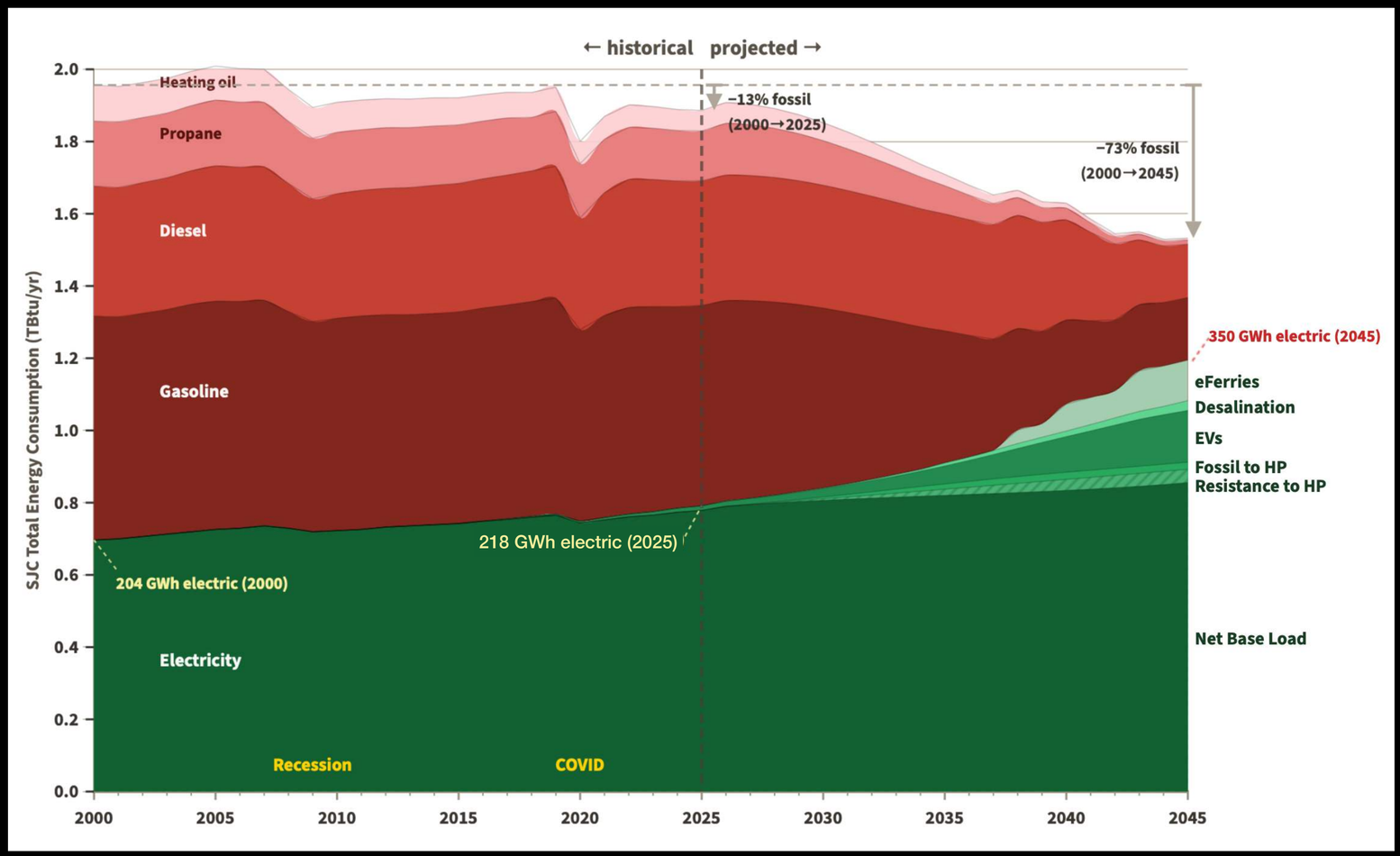
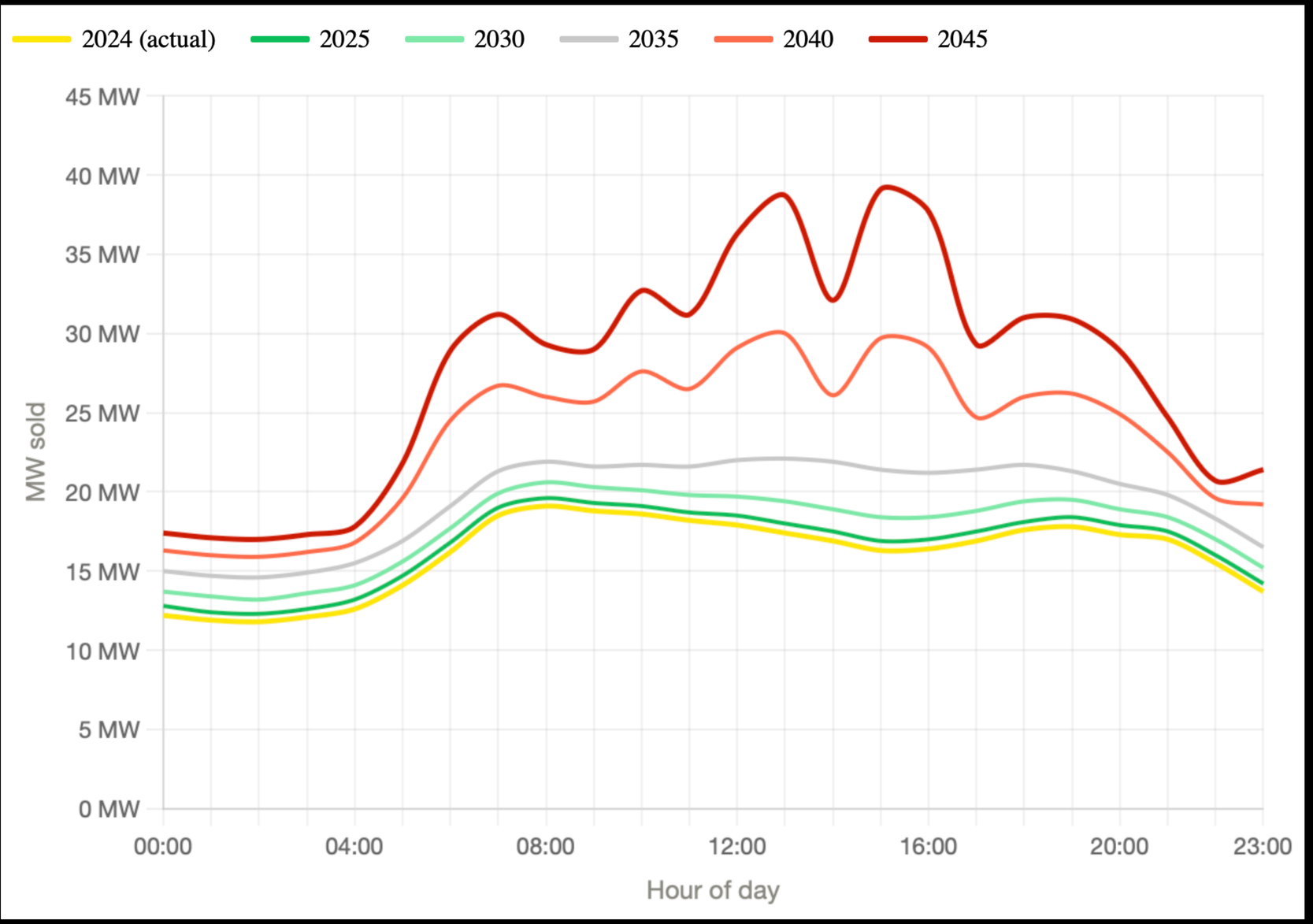
SJC Energy Consumption Per Capita: 2000 to 2045





Source: SJC GHG Inventory; WA DOT VMT, EIA SEDS, OPALCO

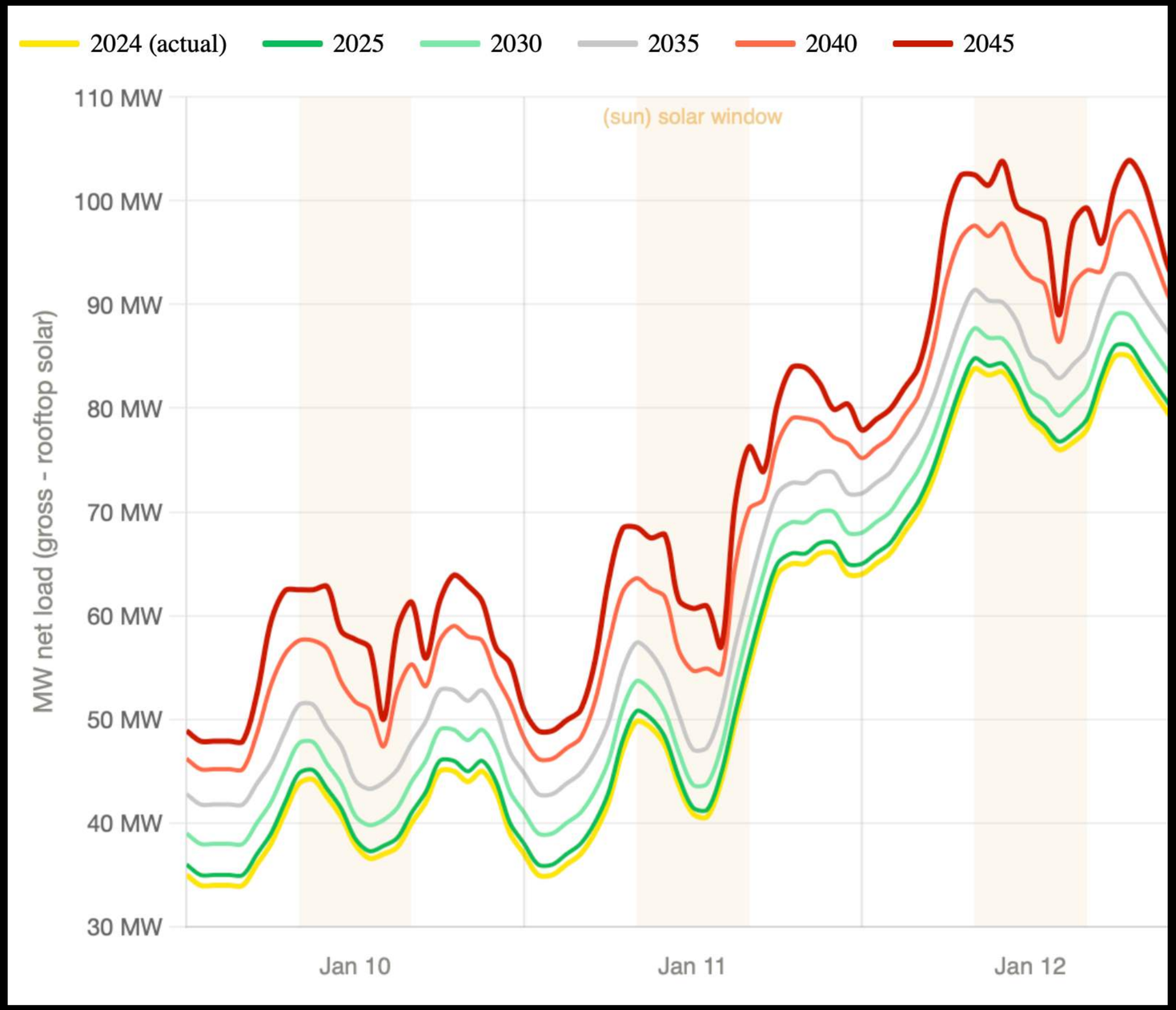
Summer Load Projection: 2024 to 2045



Notes

- Based on 2024 summer
- 2040 - 2 eFerries
- 2045 - 3 eFerries

Winter Load Projection: 2024 to 2045, nominal and cold snap



Notes

- Based on 2024 cold snap event
- 2040 - 2 eFerries
- 2045 - 3 eFerries

Discussion

Addenda

What problem are we trying to solve?

- Mainland Outages - heat domes, cold snaps, WECC analysis, but not very much demand at risk hours
- Submarine Cable Capacity Exceeded - cold snaps, trending higher with population, once per year, a few days
- BPA Demand Price Surges - cold snaps, trending higher with population, large one month demand charger per year
- Mainland Market Price Surges - heat domes, cold snaps, a few hours to a few days
- Post BPA Contract Wholesale Price Inflation - year-round

Potential Solutions

- Do nothing - pass through mainland prices, outages just like now, build bigger submarine cable
- Do nothing - WA Governor blinks after first rolling blackout and embraces natural gas speaker strategy, still need to build bigger submarine cable
- Diesel Generators on Each Island - land efficient, dirty energy, used infrequently
- No New Population Growth - caps the largest contributor to load growth (73% through 2045)
- Local Microgrids - need 875-acres, caps price of Tier one and some Tier 2 mainland power, extends submarine cable life and runway for new cables, mitigates outages during 3 sunny seasons and critical services during winter
- Dispatchable Member Storage - mitigates mainland price surges,

Legal Obligations of Counties

Under the GMA, counties must ensure adequate public facilities and utilities are available or planned to support projected growth. While counties themselves might not directly provide services like water and electricity, they have a statutory responsibility to coordinate and confirm that essential public services are available to meet the demands of development.

Relevant Legal Basis

RCW 36.70A.070(3) & (4) (Capital Facilities and Utilities Elements):
Counties must include detailed analyses and policies in their Comprehensive Plans for providing necessary infrastructure, even if those services are delivered by independent entities.

Concurrency Principle (RCW 36.70A.020(12)):
Development approvals are conditioned upon the assurance that adequate public facilities and utilities will be available when needed. This includes water and power, even if provided by third parties like municipal water systems or electric cooperatives.

Washington State Supreme Court Rulings (e.g., Whatcom County v. Hirst, 2016):
Case law confirms that counties must actively ensure water availability. In Hirst, the court held that counties cannot approve development without verifying water adequacy—this logic broadly applies to other critical utilities.

Implications

If a local utility explicitly states it cannot provide adequate water or electricity, the county is legally obligated to respond by:

- Halting or conditioning development until solutions are found.
- Requiring developers to demonstrate that infrastructure can be feasibly provided.
- Coordinating with providers or regional partners to solve capacity shortages.
- Adjusting land-use planning and growth targets to align with realistic infrastructure availability.

Simply claiming “not our problem” would be legally insufficient and likely subject to challenge under the GMA.

Summary

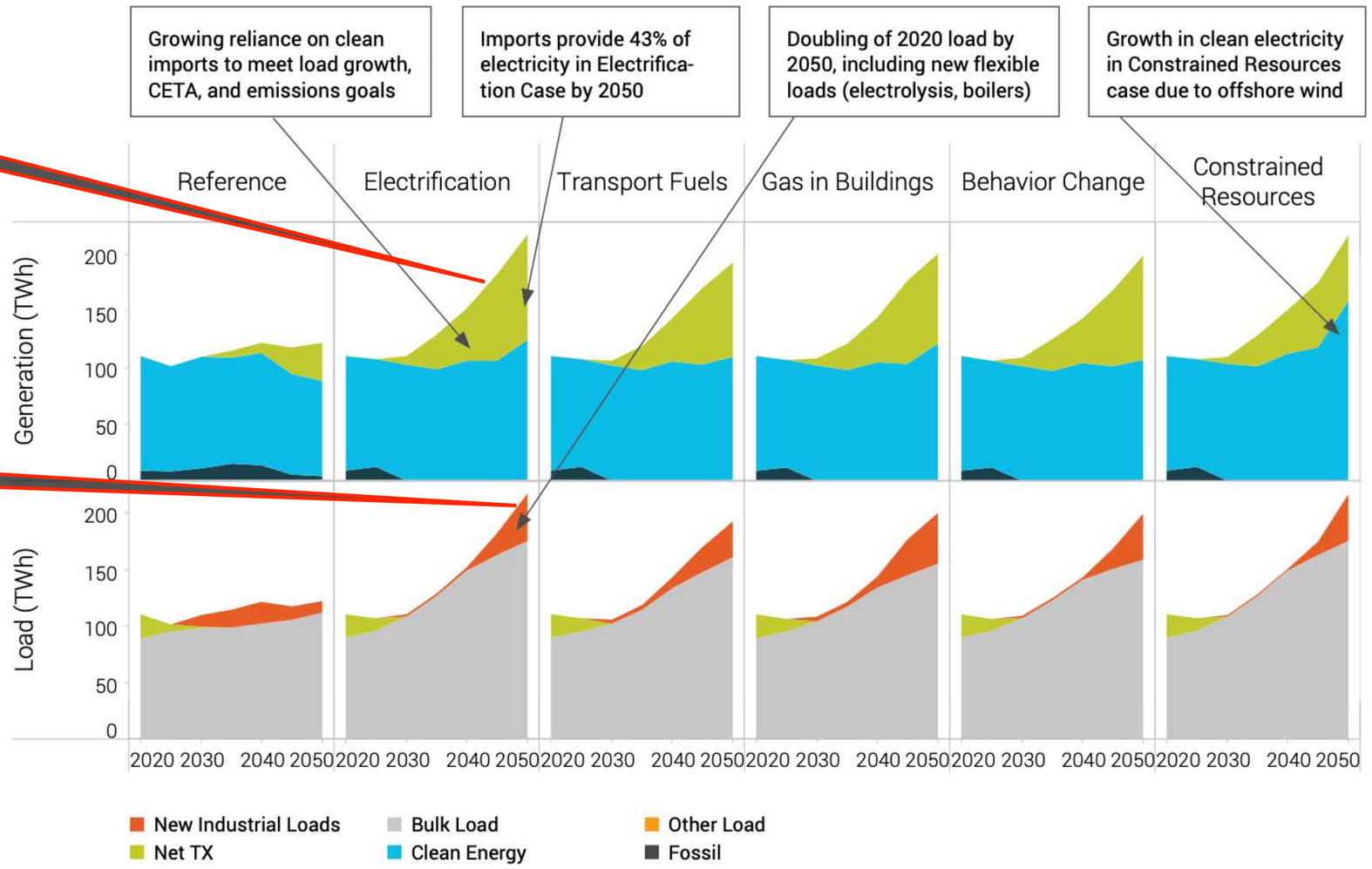
The county bears ultimate planning and regulatory responsibility under state law—even if utilities are provided externally. Therefore, it cannot abdicate responsibility for ensuring adequate public services are available.

The Winter Problem: Washington is not California – WA 2021 Energy Strategy depends on imports

NW solar and wind are marginal, requiring imports to meet new load

Load projected to double by 2050

FIGURE 26. POTENTIAL FUTURE ENERGY MIX IN DEEP DECARBONIZATION MODELING



Source: Appendix A – Deep Decarbonization Pathways Modeling Report, December 11, 2020 (p. 38).

Source: W 2021 Energy Strategy

BPA Provider of Choice

Provider of Choice Timeline

Last Updated Feb. 2025

2022	2023		2024		2025	2026		2027		2028
Jul	Feb	Sep	Apr	Nov	Jun	Jan	Aug	Mar	Oct	May

Policy & ROD

- **Concept Paper** July 14, 2022
- **Policy Workshops** Jul 2022 - Apr 2023
- **Draft Policy Release** July 20, 2023
- **Public Comment Period** Jul 20, 2023 - Oct 13, 2023
- **Early Planned Product Workshops** Sep 2023 - Dec 2023
- **Final Policy and ROD Release** March 21, 2024

Policy Implementation & Contract Development

- April 2024 - Feb 2025 **Workshops and Contract Drafting**
- Mar 2025 - Apr 2025 **All DRAFT Contract Templates: Public Comment Period**
- **All FINAL Contract Templates Released** Jun 2025
- **Contract ROD Released** Aug 2025
- **Offer and Execute Contracts** Sep 2025 - Dec 2025
- **All Contracts Executed** Dec 2025

System Readiness & Go Live

- Jun 2024 - Sep 2028 **Contract Delivery and System Readiness Processes**
- **Power Deliveries Under New Contracts Begin** October 1, 2028

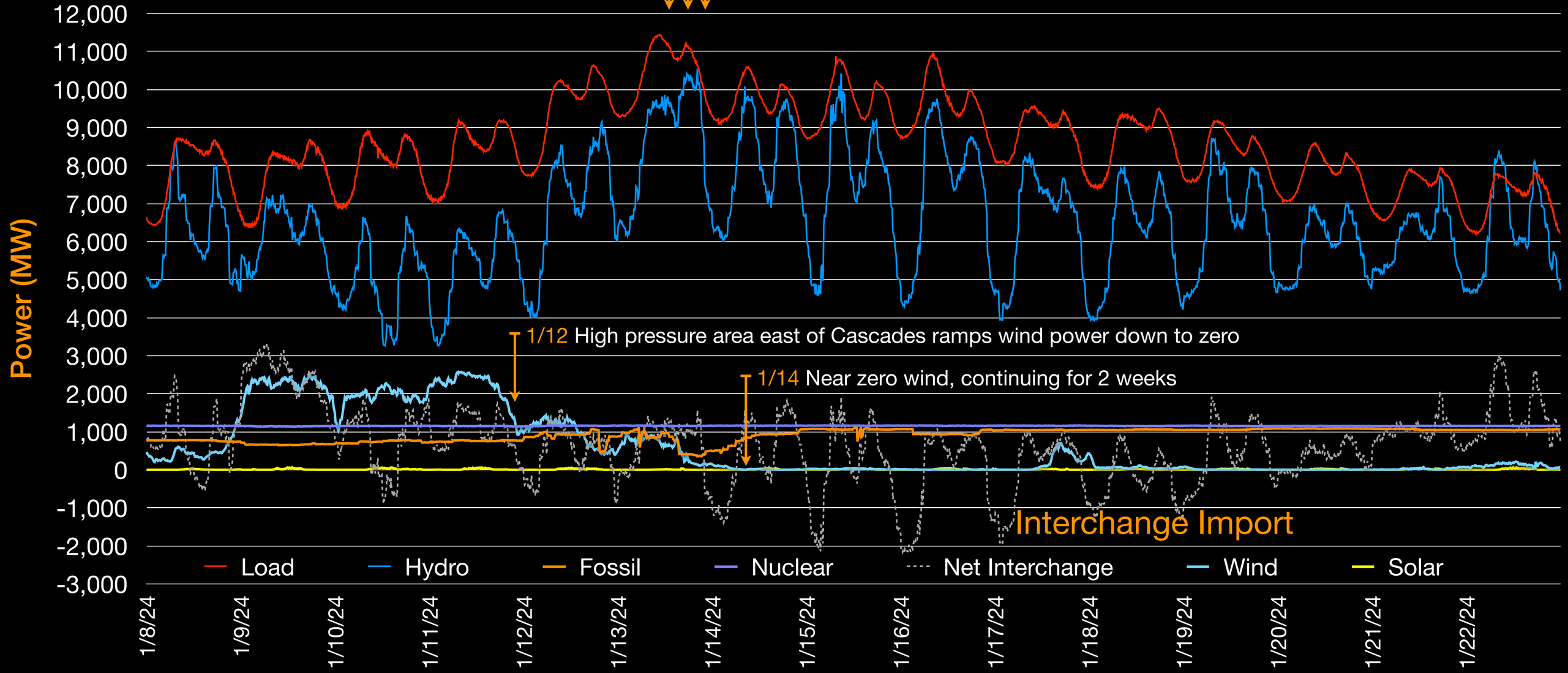
Near Miss Timeline

1 pm Jackson Prairie natural gas storage fields went offline due to equipment failure

Evening Electric prices spiked to nearly $2,000/MWh

Several hours into the emergency, several electric utilities began calling on their customers for conservation, and to quietly plan for broad outages.

11 pm Jackson Prairie back in service late in the evening



{ 5 day sub-zero temperatures }

Source: BPA

WRAP Cold Snap Regional Interchange Analysis

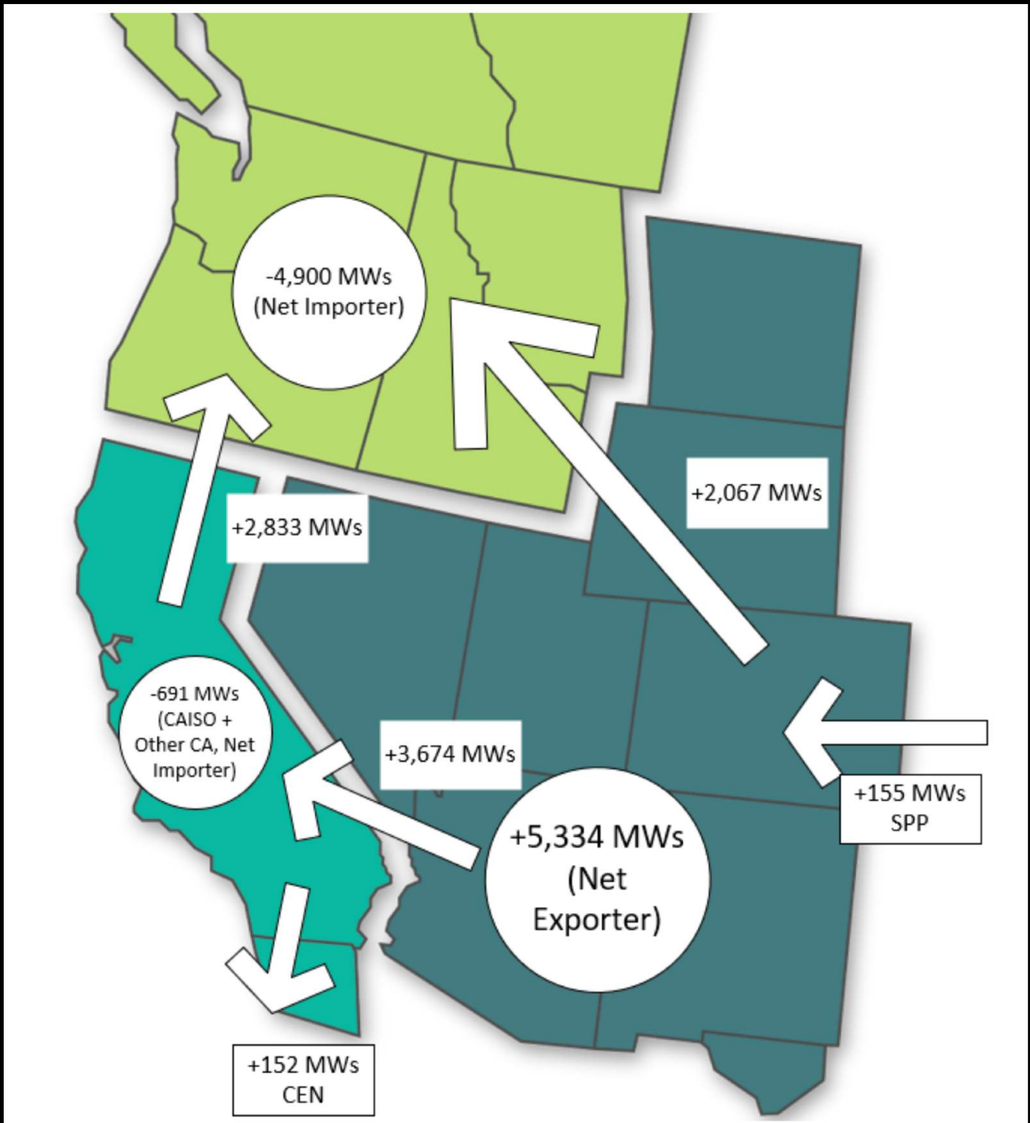


Figure 1 - Average net regional imports into the Northwest during January 12 through January 16, 2024.

"The conditions experienced January 12 through January 16, 2024, highlighted a tipping point and demonstrated how close the region is to a resource adequacy crisis."

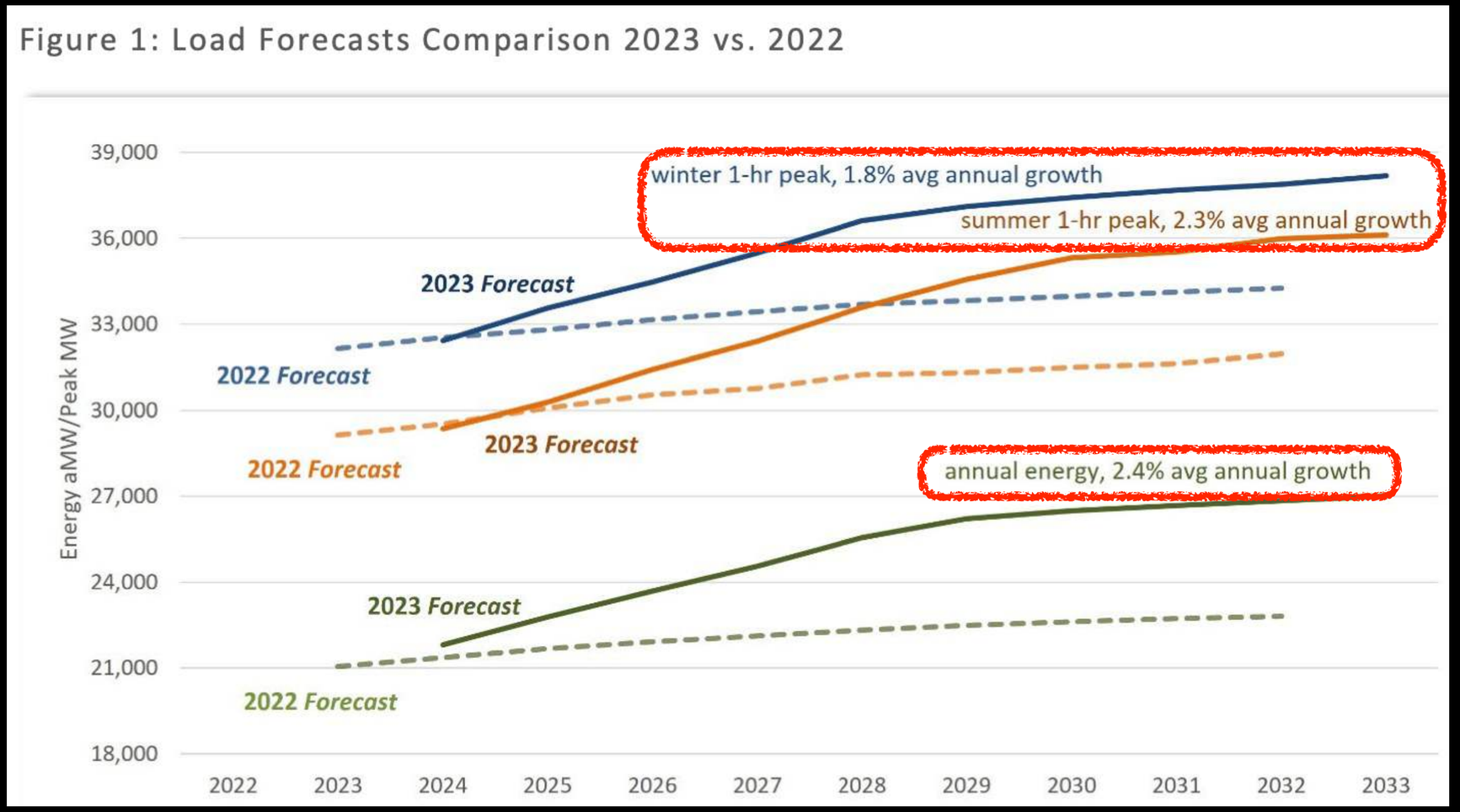
"The Northwest was a net importer of an average of 4,900 MW per hour during the five days from January 12 – January 16, 2024."

Notes

- Hourly interchange for the 15 Balancing Authorities in the Northwest region summed together
- Interchange between entities in the region excluded (neither an import into or export out of the region)
- Hourly values averaged

Source: Western Resource Adequacy Program (WRAP)

Impending NW Regional Power Capacity Shortages: PNUCC 2023 Study



Notes

- The 2023 Forecast reflects accelerated and steeper regional load growth compared to previous years.
- The 2023 loads reflect a markedly different trajectory than past forecasts, with a 20 percent increase in load growth in the first five years.
- Much of this load growth is attributed to more certainty in prospective new industrial loads over the next five years.
- Only a portion of EV's, and no other beneficial electrification is included in load forecast. It will be included as it becomes more apparent what it is.

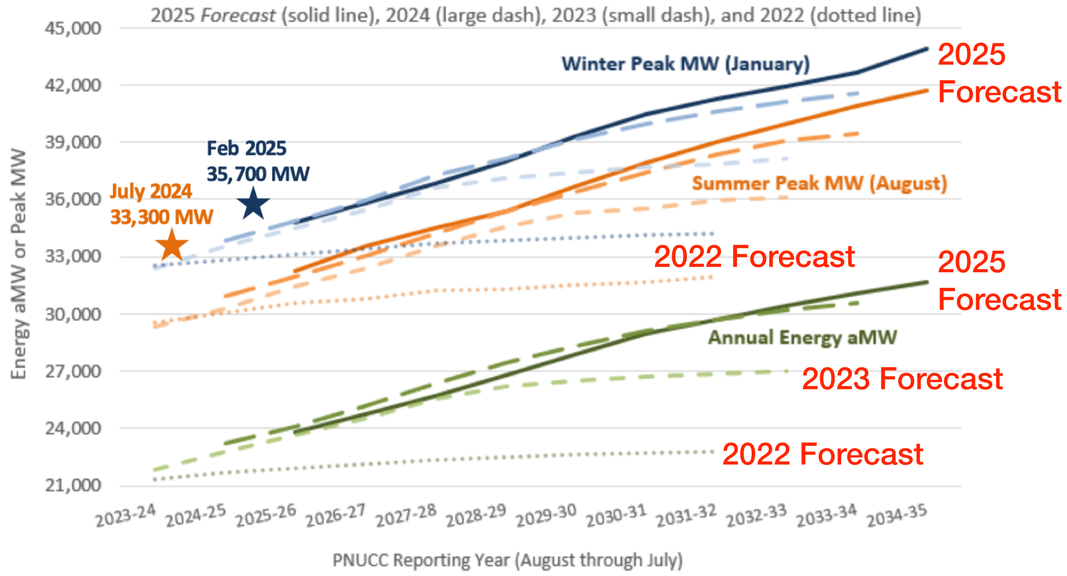
"The overall effect of electrification and our understanding of it is expected to increase over the next several years."

Source: Northwest Regional Forecast, 2023; PNUCC, WECC

Regional load forecasts continue to increase due to electrification, new large loads, and AC adoption

PNUCC 2025 Northwest Regional Forecast

Energy aMW or Peak MW Forecast



Growth Rates

Energy	10 year
2025 *Forecast*	3.2%
2024 *Forecast*	3.1%
2023 *Forecast*	2.4%
2022 *Forecast*	0.9%

Summer Peak	10 year
2025 *Forecast*	2.9%
2024 *Forecast*	2.7%
2023 *Forecast*	2.3%
2022 *Forecast*	1.0%

Winter Peak	10 year
2025 *Forecast*	2.6%
2024 *Forecast*	2.3%
2023 *Forecast*	1.8%
2022 *Forecast*	0.7%

Load growth acceleration is attributable to multiple distinct drivers, despite impact of energy efficiency

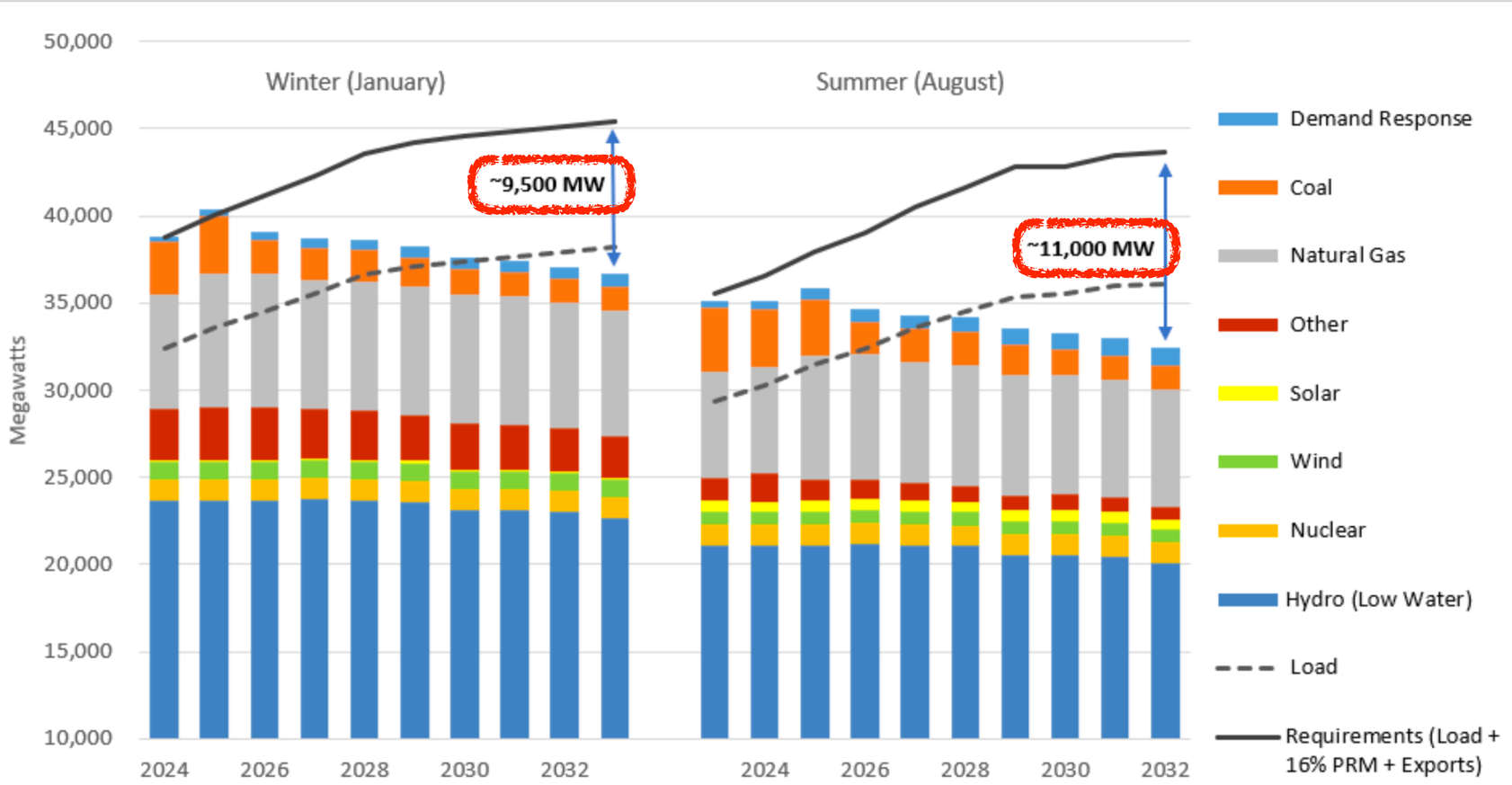
Driver	Near-term Impact
Economywide **energy efficiency**	Small load reductions in both seasons
Higher-than-expected **air conditioning adoption** after recent heat waves	Small-medium peak load growth in the summer
Policy-driven **electric vehicle adoption**	Medium peak load growth in both seasons
Population growth and new building construction	Medium peak load growth in both seasons
Anticipated **data center** interconnection	Large average and peak load growth in both seasons

- E3's load forecast used in this study, data center growth represents ~1.9 aGW by 2030, growing to ~3.1 aGW by 2045.

Source: E3

Impending NW Regional Power Capacity Shortages: PNUCC 2023 Study

Figure 6: Peak Capacity Load/Resource Picture



Requirements are expected load plus a 16% planning reserve margin plus exports. They are higher than the peak hour load to ensure that utilities have sufficient resources to count on when the weather is above normal and some resources are not generating. When forecast peak hour requirements exceed the forecast of existing resource peaking capabilities, a deficit is identified and when the opposite is true, a surplus is identified.

Notes

- Summer and winter deficits starting in 2025 and growing
- Only committed new resources of generation are included
- PNUCC forecast shows deficits on the order of 9,500 to 11,000 MW without considering new electrification loads!

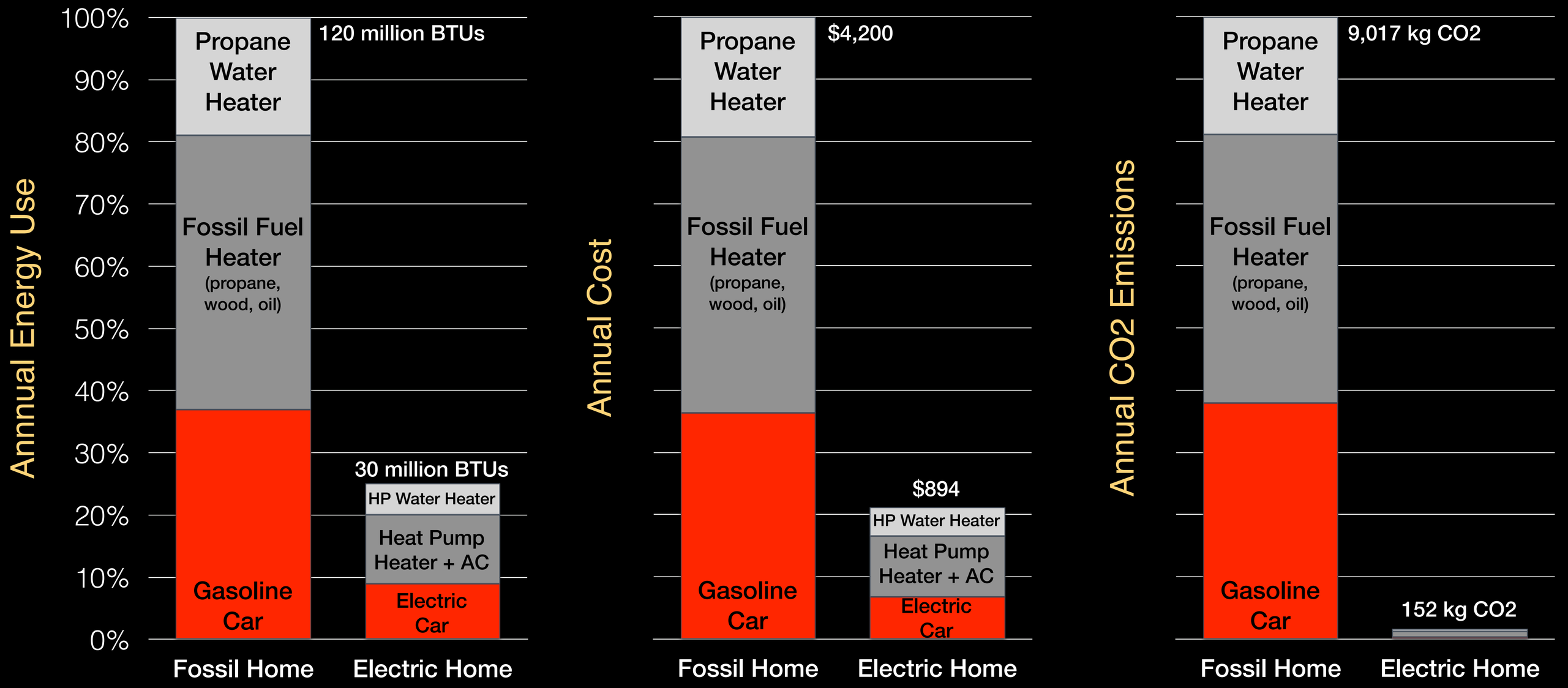
Source: Northwest Regional Forecast, 2023; PNUCC

OPALCO: Community Leadership in Local Energy and Climate Action

	OPALCO	Gasoline	Propane
Energy Business	Nonprofit	For Profit	For Profit
Investment in Community	✔	✘	✘
Energy Efficiency and Conservation Programs	✔ $20+ million	✘ $0	✘ $0
Low-income Programs	✔ $1.8+ million	✘ $0	✘ $0
Investing in Local Energy	✔	✘	✘
Investing in Climate Action	✔	✘ in denial	✘ in denial
Mitigating Wildfire Risk	✔	✘ making it worse	✘ making it worse

Beneficial Electrification: More Efficient, Lower Cost, Much Cleaner

Save Energy → Save Money → Save the Planet!



Typical SJC home (40 million BTU), and driving (10,000 miles per year, 26 MPG)

San Juan County Carbon Footprint: 218,655 Metric Tons per Year

Major Sources

Transportation

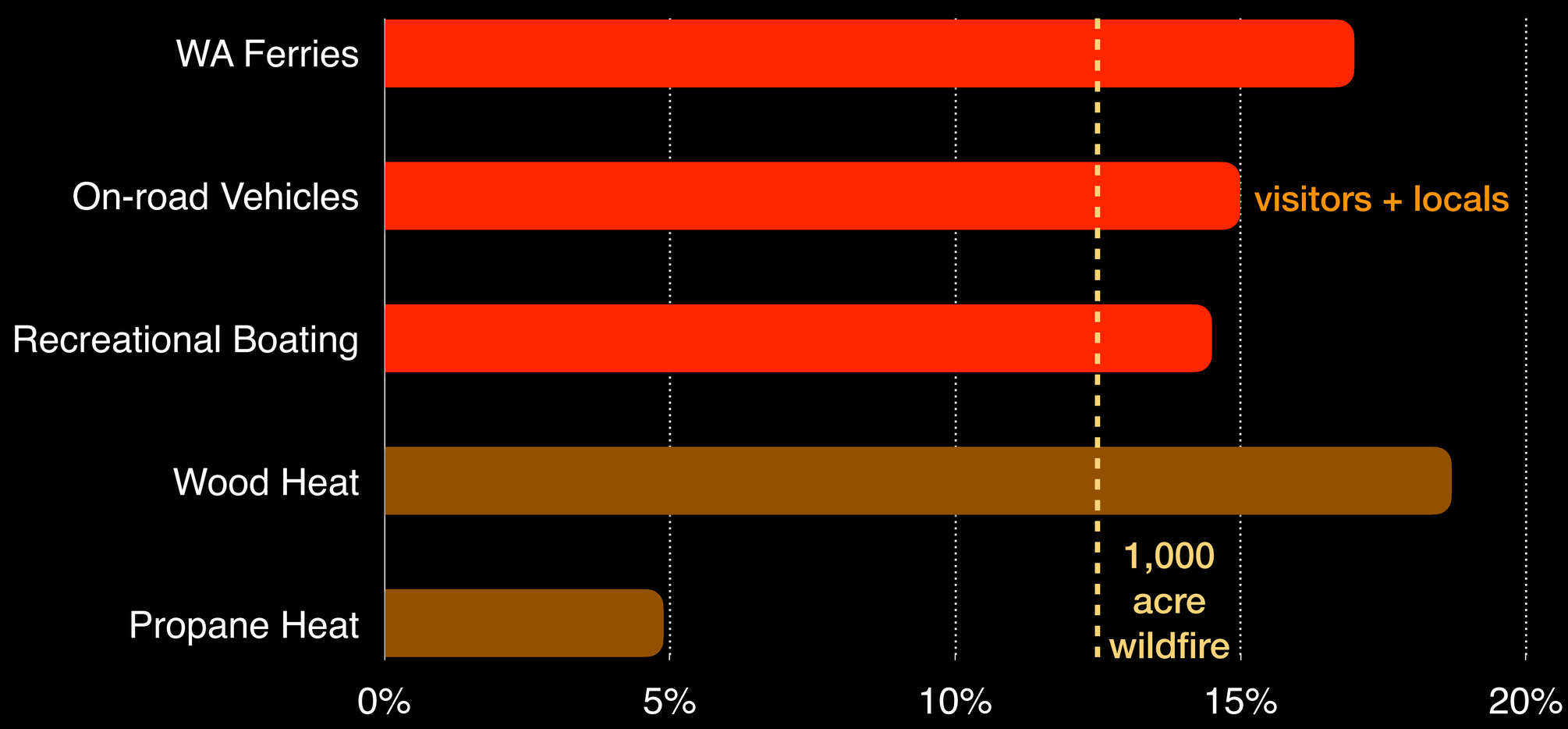
47%

Heating

20%

Share of Total CO_2 Emissions

source: SJC Community and County Operations GHG Emissions, 2023



= 67% of total CO2 emissions

Desalination or Aquifer Recharge Load: 2025 to 2045

San Juan County has more desalination facilities than any other county in Washington state

Period	Water Production (GPD)	Load (MWh/yr)	Growth Phase & Key Driver
2025	25,000	200	~14 Class A water systems serving 540+ households on 6 islands, ~25,000 gpd production, 512 kWH annual load per household
2028 – 2030	42,466	500	**Pilot Phase** Potential first community-scale RO systems for vulnerable UGAs (Urban Growth Areas)
2031 – 2034	127,397	1,500	**Ramping** Integration of desalination into town water systems to supplement declining aquifer recharge. Pilot managed aquifer recharge (MAR) injection programs begin using surplus RO production to build freshwater pressure barriers against saltwater intrusion at vulnerable nearshore well fields.
2035	212,329	2,500	Desalination load growth begins to accelerate as climate impacts on potable water become mainstream
2036 – 2039	360,959	4,250	**Utility-scale RO plants come online** load becomes a significant dispatchable asset for the grid. MAR injection scaled to strategic aquifer zones identified by USGS study; desal+recharge operates as integrated freshwater resilience system.
2040 – 2044	573,288	6,750	RO becomes a primary source for peak summer demand
2045	679,452	8,000	**Full Adaptation** Desalination is ~4% of total county load; often used as dispatchable load during ferry charging, serving ~25% of summer consumption

eFerry Load: 2025 to 2045

Over one-third of county transportation GHG pollution comes from the diesel ferries

	Assumption
Delivery schedule	2037, 2039, and 2041 one interisland and two mainline
Charging Terminals	Lopez, Orcas, and Friday Harbor 15 MW for 15 minutes, 8 times per day per terminal
Charging Load	32,850 MWh 10,960 MWh per ferry, 45 MW coincident peak

Heating Load: 2025 to 2045

Over one-third of county GHG pollution comes from the fossil-fueled heating (propane, heating oil)

SPACE HEATING — Estimated Share by System Type (% of homes)

Year	Fossil (Propane + Heating Oil)	Electric Resistance (Baseboard)	Heat Pump (Air Source)	*Other (Wood etc.)*	CHECK
2020	32%	37%	28%	3%	100%
2025	28%	30%	40%	2%	100%
2030	20%	24%	54%	2%	100%
2035	12%	18%	68%	2%	100%
2040	5%	12%	81%	2%	100%
2045	3%	8%	87%	2%	100%

WATER HEATING — Estimated Share by System Type (% of homes)

Year	Fossil (Propane Water Heater)	Electric Resistance Tank	Heat Pump Water Heater (HPWH)	*Solar / Other*	CHECK
2020	16%	74%	8%	2%	100%
2025	14%	67%	17%	2%	100%
2030	10%	57%	31%	2%	100%
2035	6%	44%	48%	2%	100%
2040	3%	31%	64%	2%	100%
2045	2%	18%	78%	2%	100%

Source: OPALCO 2015 CPA, EIA, WA Building Codes

EV Load: 2025 to 2045

Over one-third of county transportation GHG pollution comes from the fossil-fueled vehicles (gasoline, diesel)

VEHICLE FLEET MIX — % of Registered Vehicles by Type									
Year	**Fossil / ICE (% of fleet)**	**Battery EV (BEV %)**	**Plug-in Hybrid (PHEV %)**	**Total EV (BEV + PHEV %)**	**CHECK**	**EV Vehicles (count)**	**Fossil Vehicles (count)**	**Total Fleet (count)**	*Source*
2020	**98%**	**2%**	**1%**	**2%**	**100%**	477	19,859	20,336	*WA DOL actual*
2025	**94%**	**5%**	**1%**	**6%**	**100%**	1,253	18,745	19,998	*WA DOL actual*
2030	**89%**	**9%**	**2%**	**11%**	**100%**	2,250	17,750	20,000	*IRP model*
2035	**76%**	**21%**	**3%**	**24%**	**100%**	4,800	15,200	20,000	*IRP model*
2040	**53%**	**43%**	**5%**	**48%**	**100%**	9,500	10,500	20,000	*IRP model*
2045	**31%**	**62%**	**7%**	**69%**	**100%**	13,800	6,200	20,000	*IRP model*

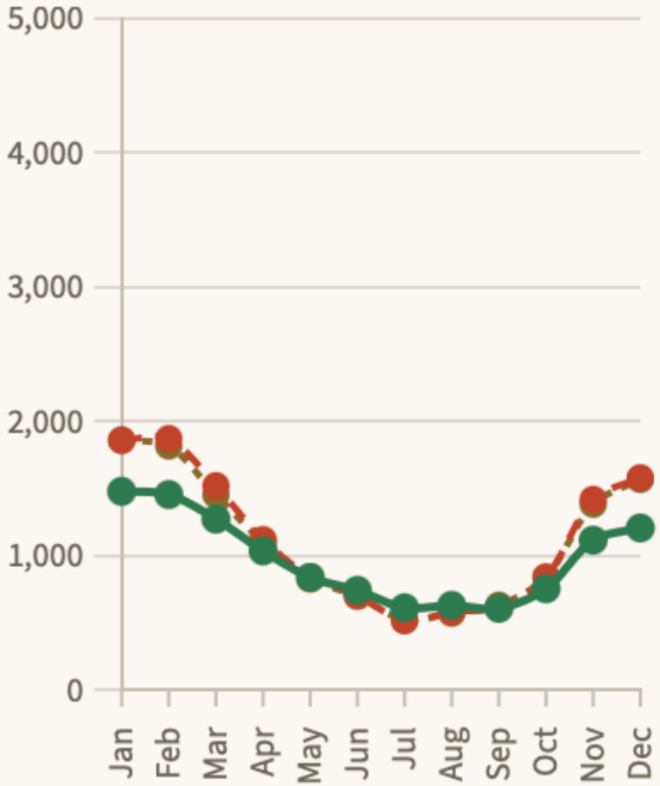
KEY POLICY MILESTONES		
2021	WA HB 1204 signed — 100% ZEV new light-duty vehicle sales required by model year 2035	**HIGH (enacted law)**
2030	WA EV sales mandate accelerates — ZEV share of new sales required to reach ~75% statewide	**HIGH (enacted law)**
2035	100% of new light-duty vehicle sales in WA must be zero-emission (ZEV mandate fully in effect)	**HIGH (enacted law)**
2035–2050	Existing fossil fleet turns over at natural replacement rate (~13–15 yr avg vehicle age). Significant residual fossil fleet remains through 2045 — especially commercial trucks, older vehicles, and marine.	**MEDIUM (fleet modeling)**
2045	IRP model projects ~69% EV fleet share. Residual 31% fossil = ~6,200 vehicles — primarily older ICE, light commercial trucks, and vehicles not subject to the mandate.	*LOW–MEDIUM (IRP estimate)*

Source: WA DOL, HB 1204

2024 Residential Load: Average kWh per meter by service size

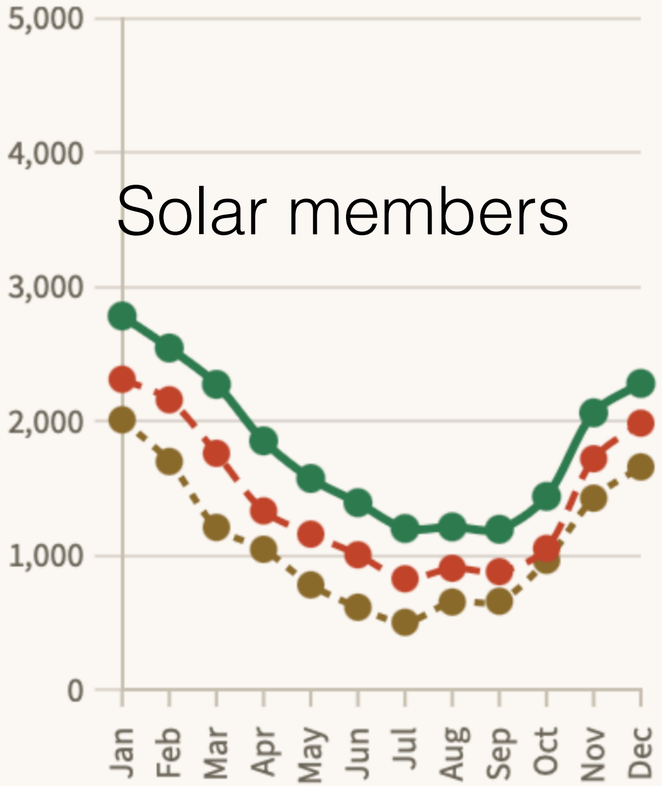
200A (95.7% of meters)

90.6% of total annual load



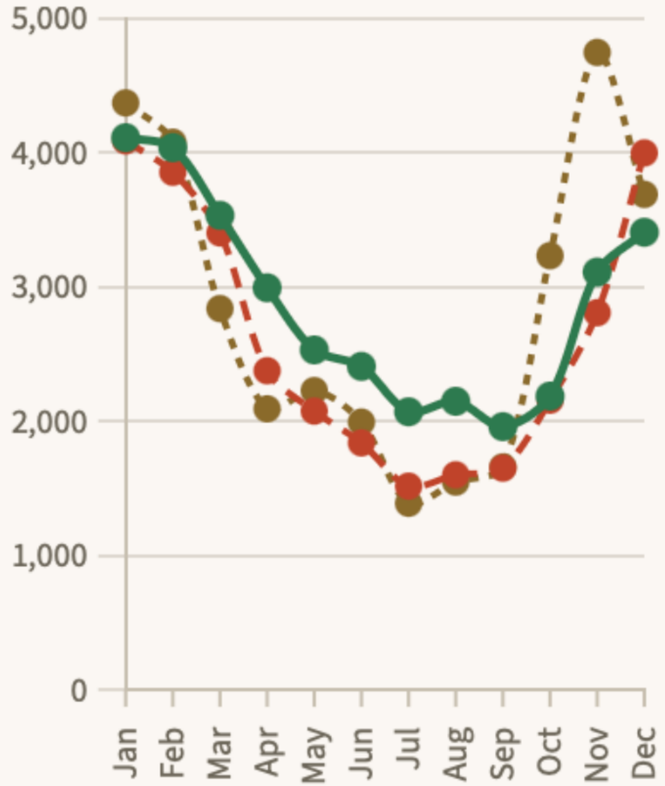
400A (2.6% of meters)

4.8% of total annual load

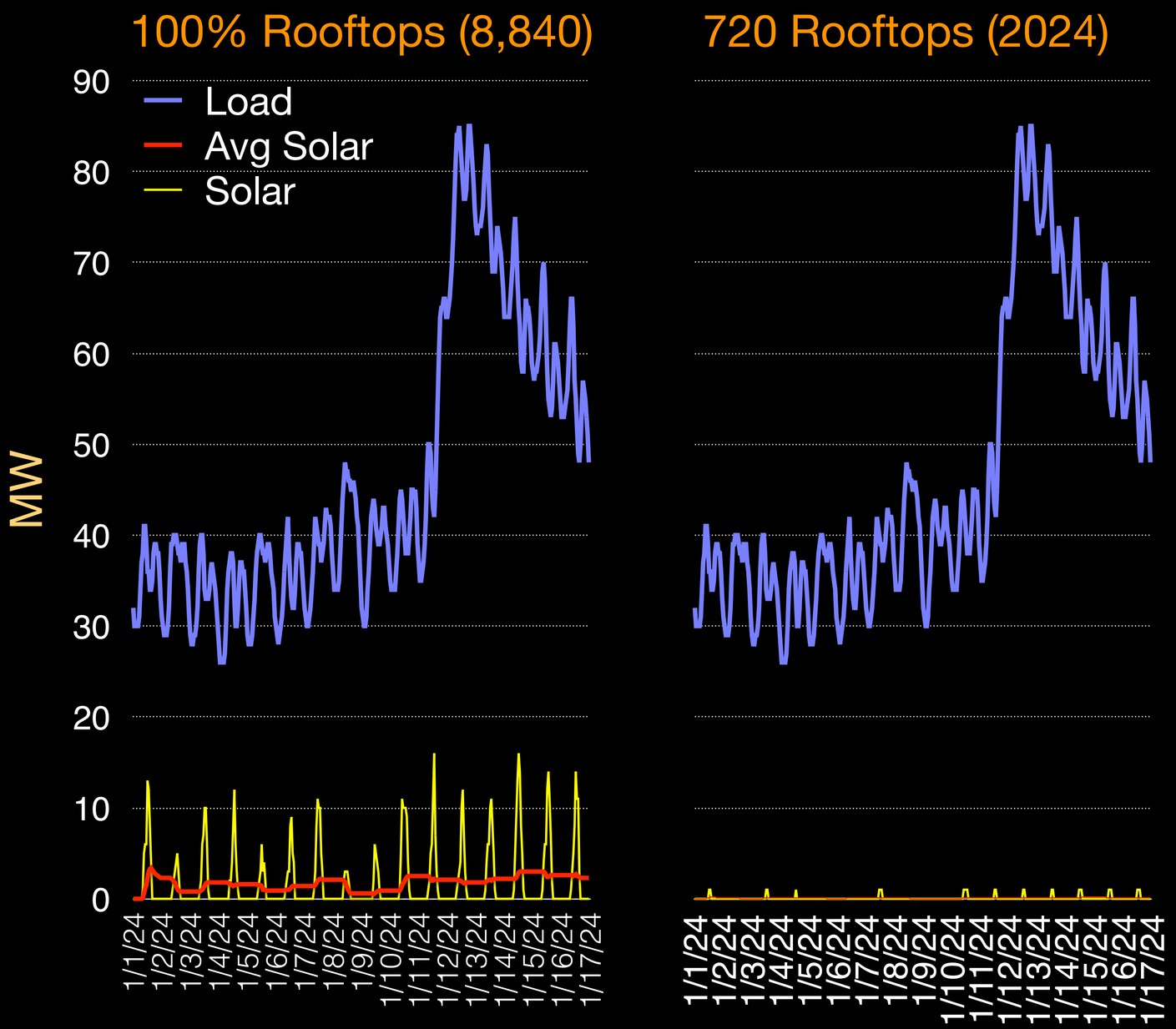


>400A (1.6% of meters)

4.6% of total annual load



Cold Snap Load: 86 MW peak load, and member rooftop solar production

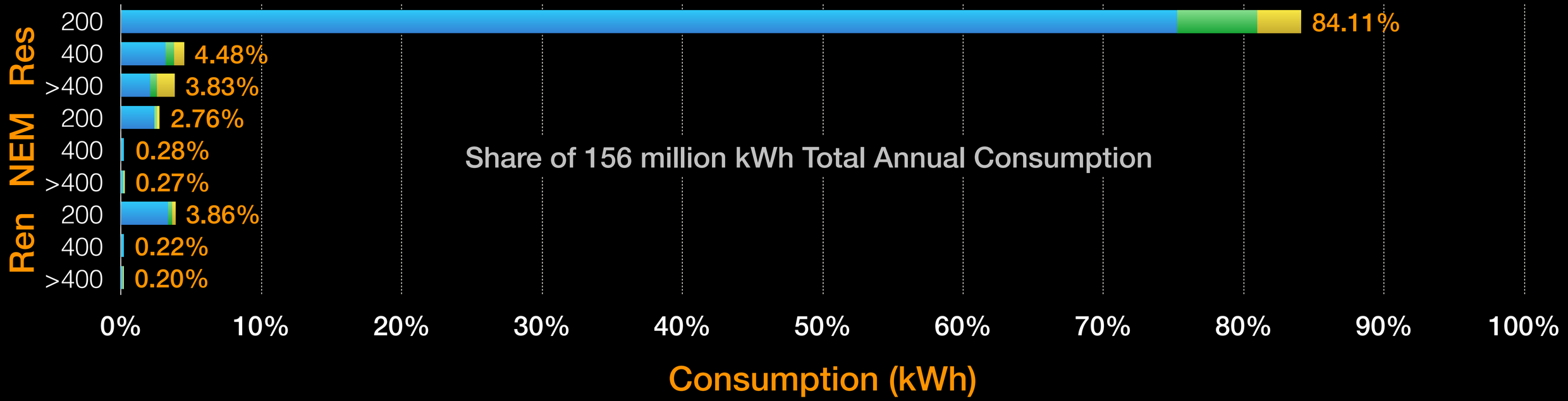


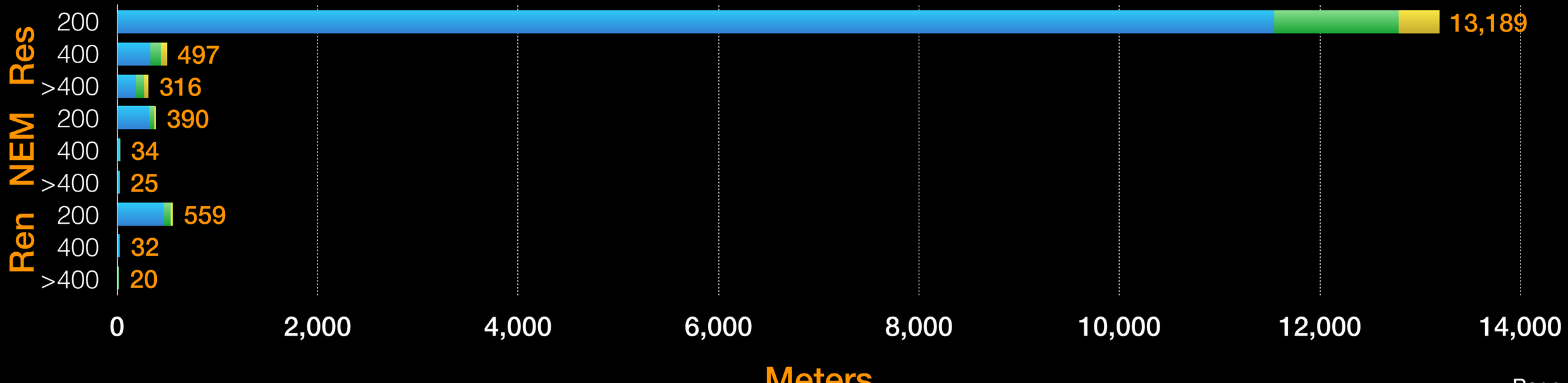
Notes

- Nor'easter began on 12 January, with near 0° F temperatures
- Load and member solar production around the January 2024 cold snap
- Solar production for **100%** of OPALCO member 10 kW rooftops (8,840 roofs), and 720 members with 7kW rooftops in 2024
- Solar production 24-hour smoothing to represent battery firming
- $300 million cost for 100% rooftop example

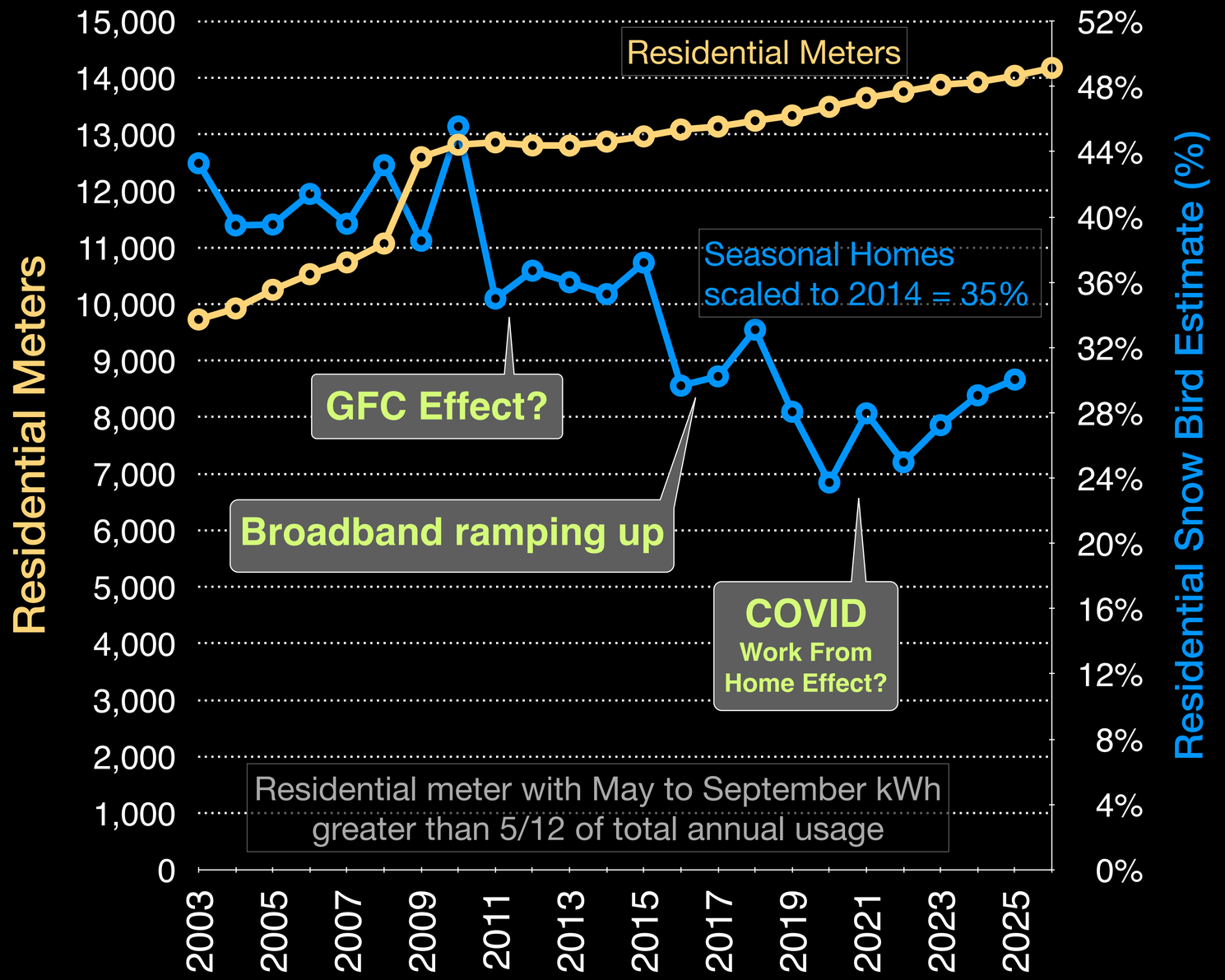
Of the county's 113,000 acres, we only need 875 acres (0.5%) to produce 35% of our energy use.

Annual Residential Member kWh Consumption: Rate Group, Service Size Analysis



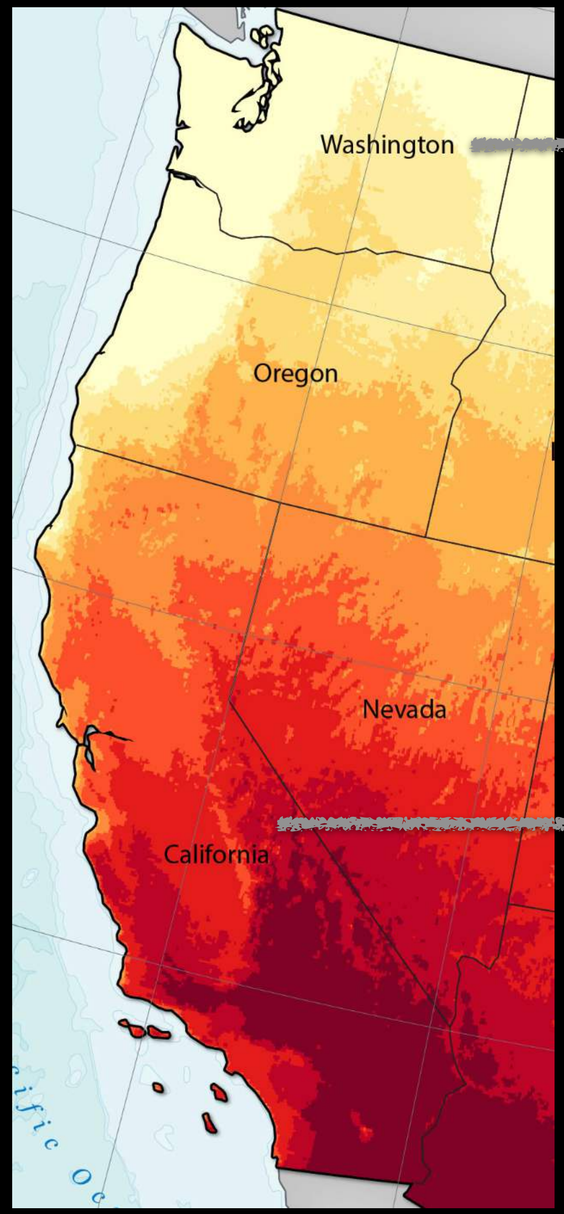


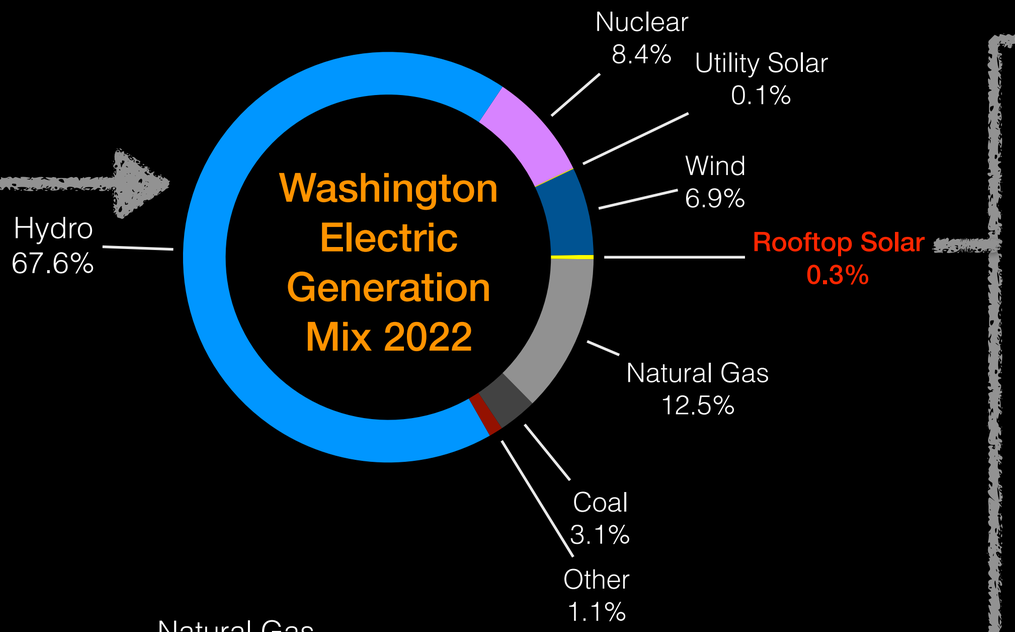
Snow Bird Analysis: Percentage of residential meters that may indicate empty winter homes

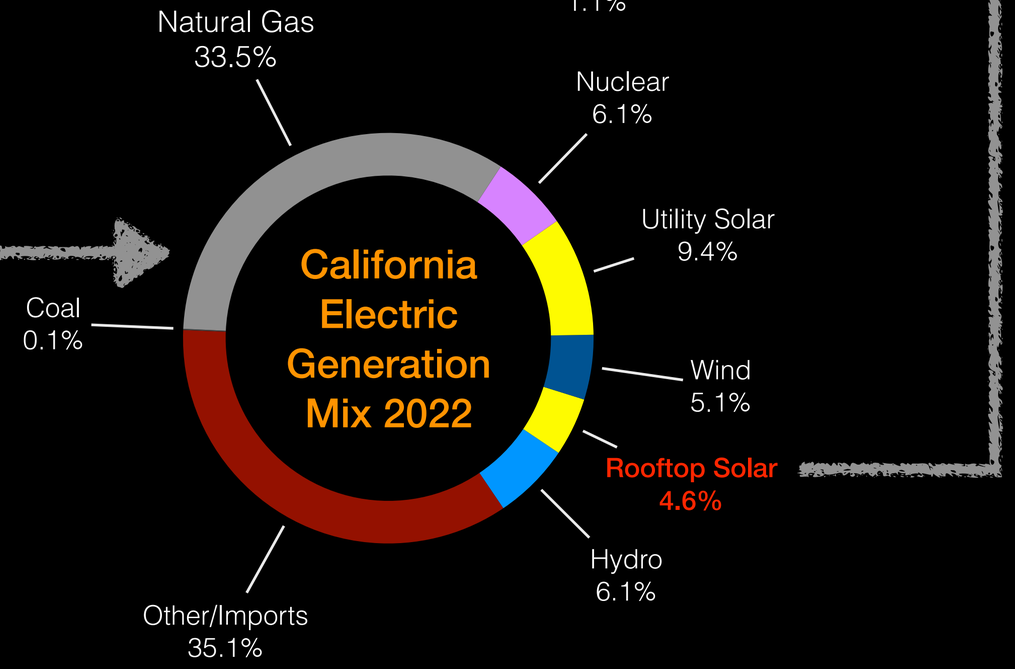


The Winter Problem: Northwest is not the Southwest – NW winter solar production is less than one-third of the SW

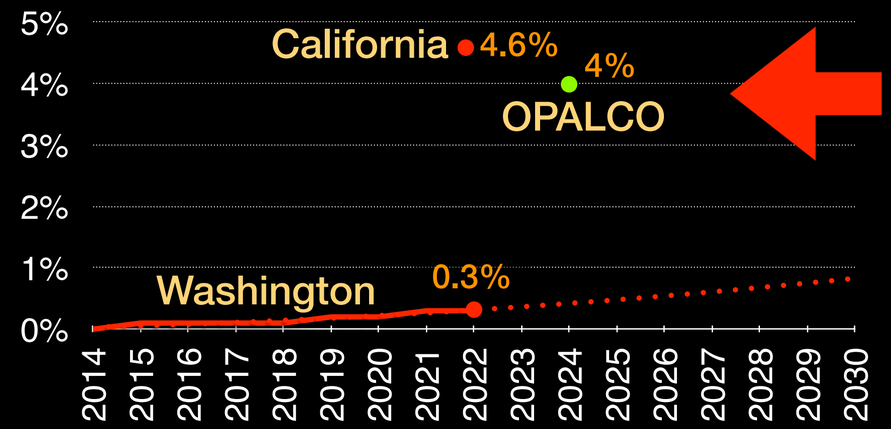
Annual Solar Irradiance







Rooftop Solar % of Total



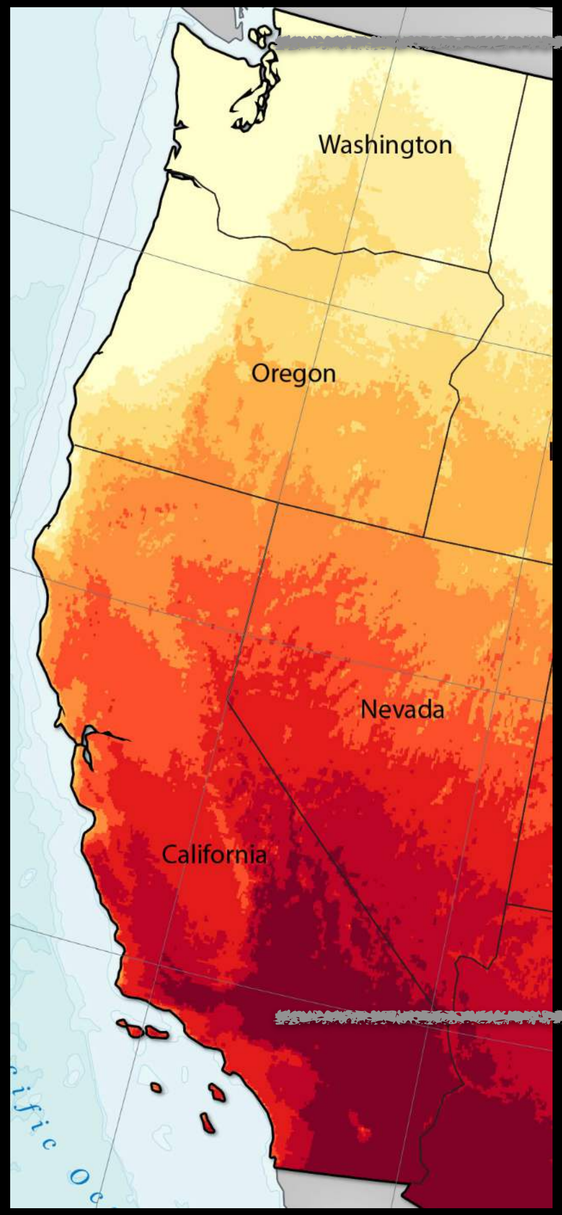
Notes

- In California, rooftop solar is only 4.6% of the total state energy portfolio.
- In Washington, where solar irradiance is a small fraction of California, rooftop solar contributes only 0.3%, and is projected to be less than 1% by 2030.
- December production is 72% less than California.
- Washington solar capacity factor is about one-third of California's.
- California utility-scale solar production is double rooftop. In Washington, it's one-third of rooftop. WA policy should incentivize utility-scale solar, which is more capital and production-efficient.

Source: EIA, energy.ca.gov, NREL, PV Watts

The Winter Problem: Northwest is not the Southwest – 10 kW rooftop solar system comparison

Annual Solar Irradiance



RESULTS

Print Results

11,550 kWh/Year*

System output may range from 11,022 to 11,939 kWh per year near this location.
Click HERE for more information.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	1.42	359
February	2.44	565
March	3.62	900
April	5.18	1,221
May	6.09	1,455
June	6.40	1,453
July	6.86	1,596
August	6.31	1,463
September	4.79	1,108
October	3.05	749
November	1.62	397
December	1.13	283
Annual	4.08	11,549

Annual production is 32% less than California

December production is 72% less than California

RESULTS

Print Results

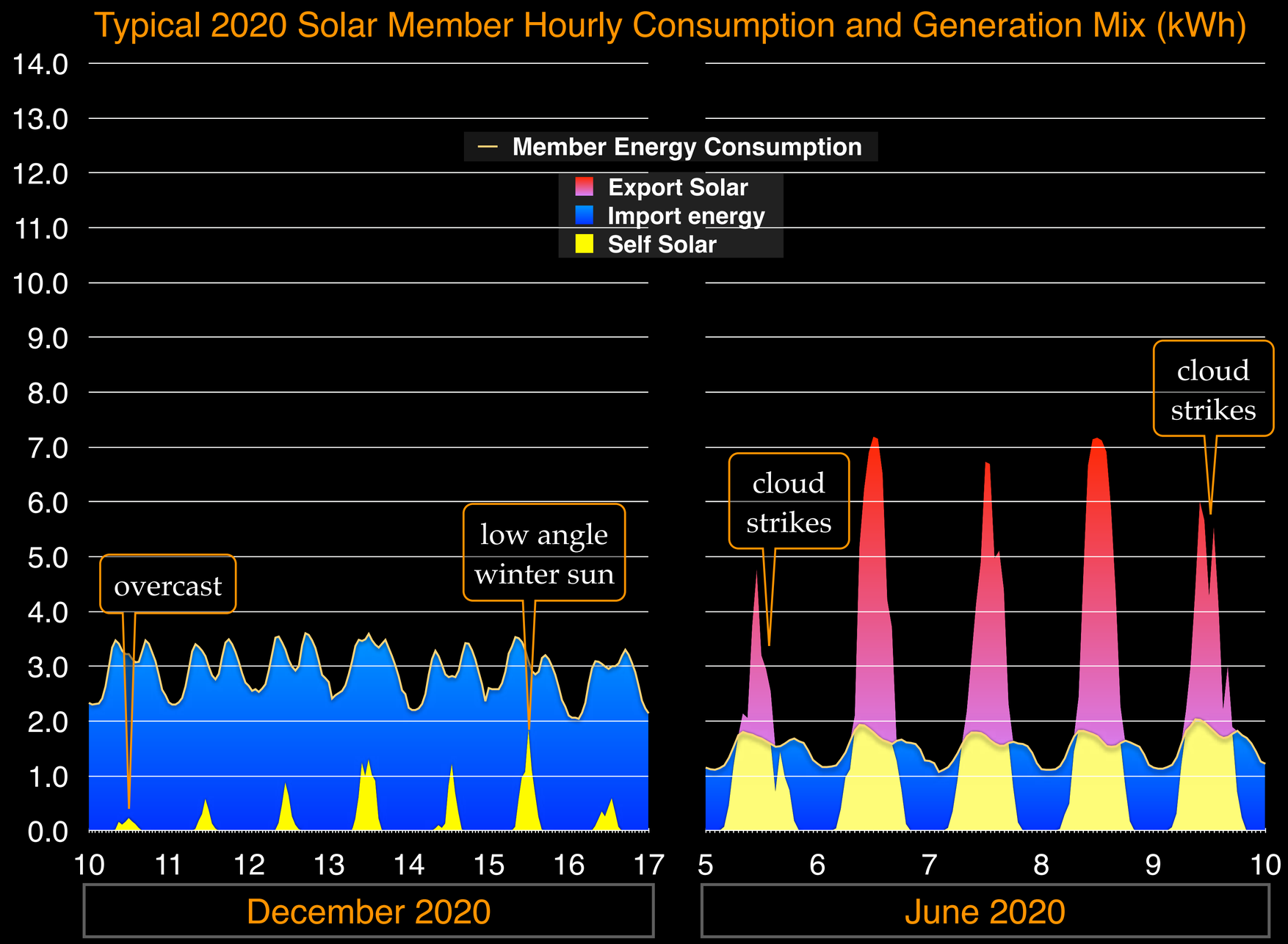
16,967 kWh/Year*

System output may range from 16,309 to 17,074 kWh per year near this location.
Click HERE for more information.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	4.52	1,084
February	5.12	1,103
March	6.29	1,466
April	6.81	1,534
May	6.95	1,596
June	7.69	1,700
July	7.58	1,698
August	7.63	1,707
September	7.16	1,557
October	5.93	1,350
November	5.04	1,152
December	4.18	1,021
Annual	6.24	16,968

Source: NREL, PV Watts

Hourly Load and Solar Production Around Winter and Summer Solstice



During winter solstice, solar insolation is at a minimum.

During summer solstice insolation is at a maximum.

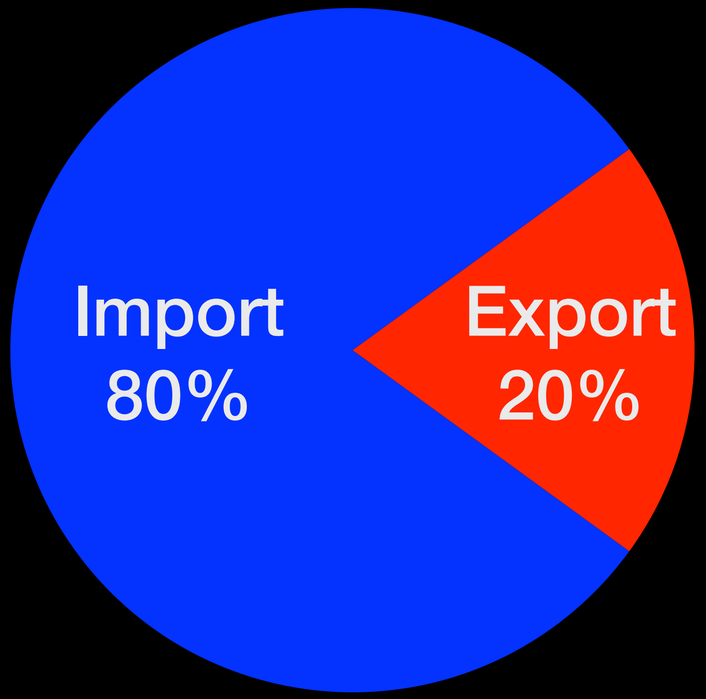
Notes

- System load typically doubles in winter.
- Winter solar is about 20% of summer.
- A typical solar member will import energy from the grid about 80% of the time - during nights, gray days, and especially in winter.
- Solar members export solar about 20% of the time, mostly on sunny summer days. This is simply a billing credit, no energy is stored for winter use.
- Note cloud strikes on 5 and 9 June late afternoon.

2022 Co-op Member Generation: Import/Export Balance

Member generators are always using the grid, either importing or exporting energy. The Co-op grid is increasingly transactional, helping members to buy and sell energy, as needed.

Annual Energy Import/Export



- A typical member generator will produce more solar in the summer than they need, and will export it to the grid, for billing credit, offsetting winter, when solar production is 12% of summer.
- Even though they produce a good portion of what they consume, they depend on the grid to firm their solar - during nights, gray days, and especially in winter.
- A typical member generator will import energy from the grid about 80% of the time - during nights, gray days, and especially in winter (chart at left).