Energy Efficiency Basis

24-GP1-206

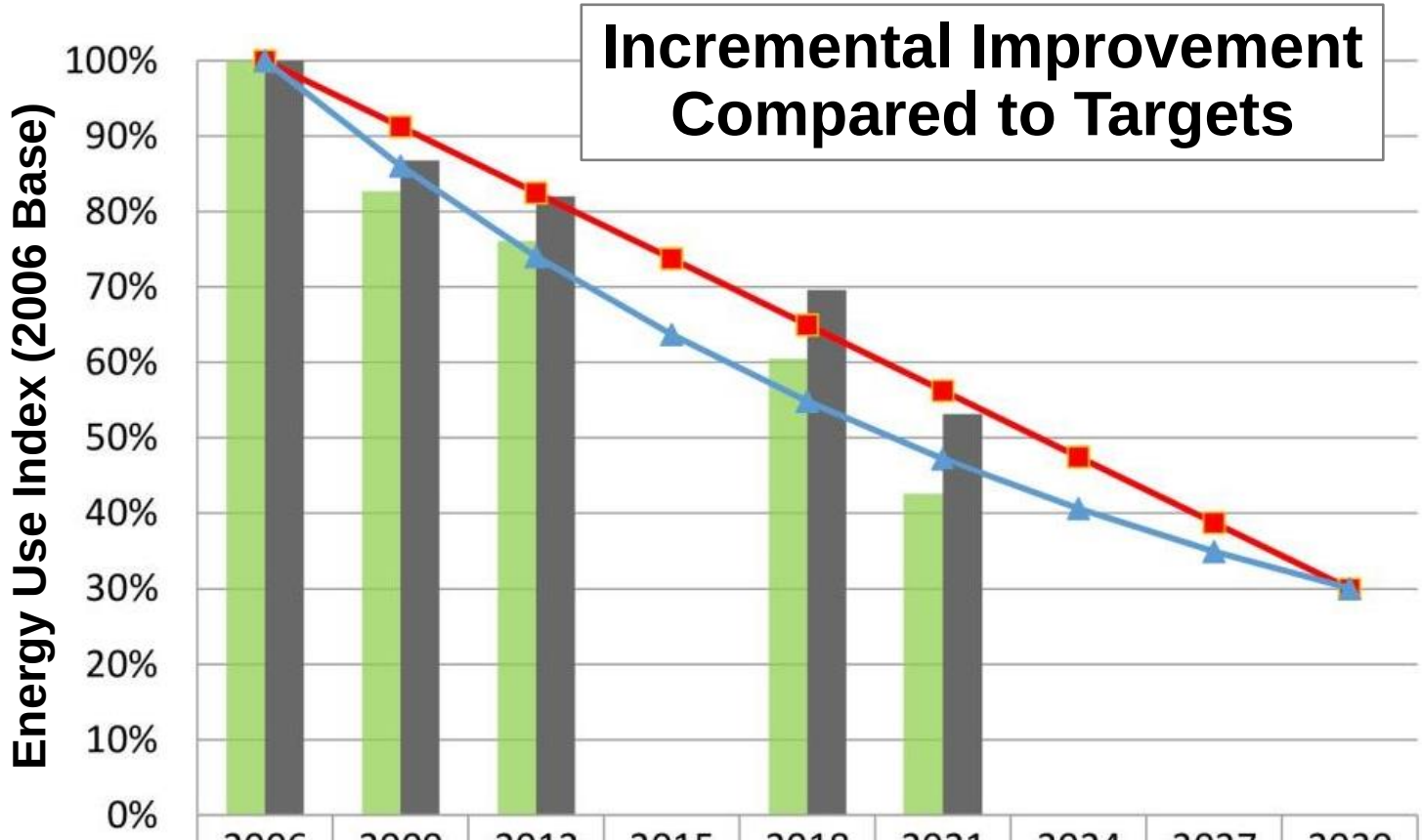
Feb. 21, 2025

Energy Efficiency

Why?

Lower cost of energy? *or*
Lower carbon emissions?

How to measure…?



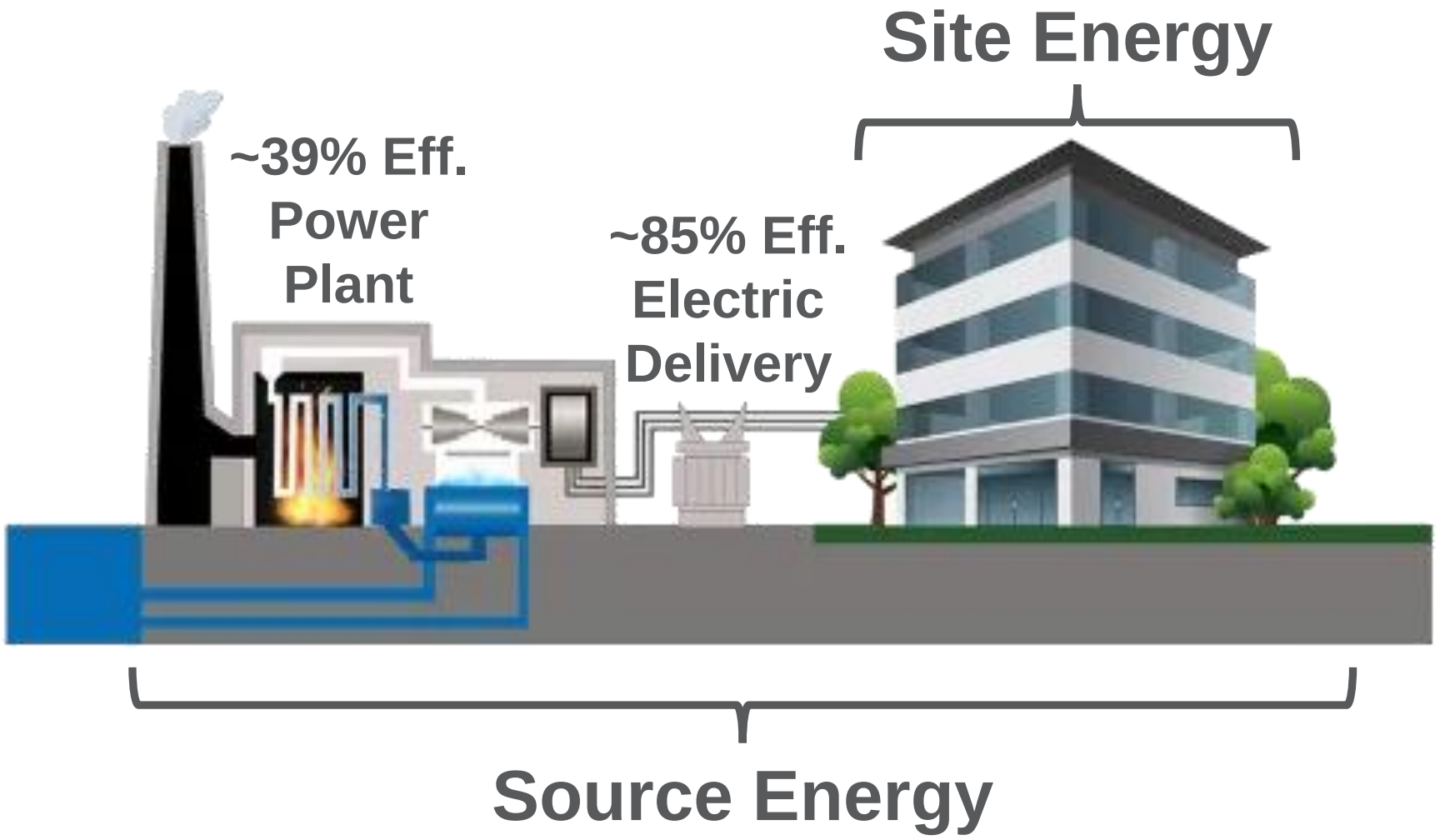
	2006	2009	2012	2015	2018	2021	2024	2027	2030
Residential	100%	82.7%	76.1%		60.5%	42.4%			
Commercial	100%	86.8%	82.0%		69.6%	53.0%			
Target: 8.75 % savings compared to the 2006 WSEC	100%	91%	83%	74%	65%	56%	48%	39%	30%
Target: 14% savings compared to each previous code	100%	86%	74%	64%	55%	47%	41%	35%	30%

Source: PNNL

Options Used to Measure Energy Efficiency

1. **Source Carbon Emissions**
   2018 & 2021 WSEC (*Before CRA V. City of Berkeley 9th Cir. 2023)*
2. **Energy Cost**
   2024 IECC (*Alternatively site or source energy use*)
   ASHRAE 90.1 (*Alternatively site energy, source energy, or GHG emissions*)
3. **Source Energy Use**
   EPA Recommendation
4. **Site Energy Use**
   a. **Compare Only Like Energy Sources**
      2006 WSEC
      Oregon Specialty Codes
   b. **Compare Dissimilar Energy Sources**
      2021 WSEC (*inconsistent: includes carbon emissions and source energy*)

Site vs. Source Energy



Source: https://www.energystar.gov/buildings/benchmark/understand-metrics/source-site-difference

Statutes

Electric Utilities

2019 CETA
Nonemitting & Renewable Generation
RCW 19.405

Buildings

2009 SB5854
Reduce Energy Use 70% ~~& Zero Fossil Fuel~~
RCW 19.27A.160

EPCA Appliance Preemption
42 U.S.C. § 6297(f)(3)

2024 I-2066
No Penalizing Gas & Repeal Zero Fossil Fuel
RCW 19.27A.020

CRA V. City of Berkeley (9th Cir. 2023)

RCW 19.27A.160

Residential and nonresidential construction—Energy consumption reduction—Council report.

(1) Except as provided in subsection (2) of this section, residential and nonresidential construction permitted under the 2031 state energy code must achieve a seventy percent reduction in annual net energy consumption, using the adopted 2006 Washington state energy code as a baseline.

(2) The council shall adopt state energy codes from 2013 through 2031 that incrementally move towards achieving the seventy percent reduction in annual net energy consumption as specified in subsection (1) of this section. The council shall report its progress by December 31, 2012, and every three years thereafter. If the council determines that economic, technological, or process factors would significantly impede adoption of or compliance with this subsection, the council may defer the implementation of the proposed energy code update and shall report its findings to the legislature by December 31st of the year prior to the year in which those codes would otherwise be enacted

EPCA: 42 U.S.C. § 6297(f)(3)

(d)WAIVER OF FEDERAL PREEMPTION

(C) The credit to the energy consumption or conservation objective allowed by the code for installing covered products having energy efficiencies exceeding such energy conservation standard established in or prescribed under section 6295 of this title or the efficiency level required in a State regulation referred to in subparagraph (B) is on a one-for-one equivalent energy use or equivalent cost basis.

(F) The energy consumption or conservation objective is specified in terms of an estimated total consumption of energy (which may be calculated from energy loss- or gain-based codes) utilizing an equivalent amount of energy (which may be specified in units of energy or its equivalent cost).

DEFINTION: energy

(3) The term "energy" means electricity, or fossil fuels. The Secretary may, by rule, include other fuels within the meaning of the term "energy" if he determines that such inclusion is necessary or appropriate to carry out the purposes of this chapter.

I-2066: RCW 19.27A.020

State energy code—Adoption by state building code council—Preemption of local residential energy codes.

(2) The council shall follow the legislature's standards set forth in this section to adopt rules to be known as the Washington state energy code. The Washington state energy code shall be designed to:

(a) Construct increasingly energy efficient homes and buildings ((~~that help achieve the broader goal of building zero fossil-fuel greenhouse gas emission homes and buildings~~)) by the year 2031;

(b) Require new buildings to meet a certain level of energy efficiency, but allow flexibility in building design, construction, and heating equipment efficiencies within that framework; and

(c) Allow space heating equipment efficiency to offset or substitute for building envelope thermal performance.

(3) The Washington state energy code may not in any way prohibit, penalize, or discourage the use of gas for any form of heating, or for uses related to any appliance or equipment, in any building.

CETA: RCW 19.405.030

Coal-fired resources—Depreciation schedule—Penalties.

(1)(a) On or before December 31, 2025, each electric utility must eliminate coal-fired resources from its allocation of electricity. This does not include costs associated with decommissioning and remediation of these facilities.

(b) The commission shall allow in electric rates all decommissioning and remediation costs prudently incurred by an investor-owned utility for a coal-fired resource.

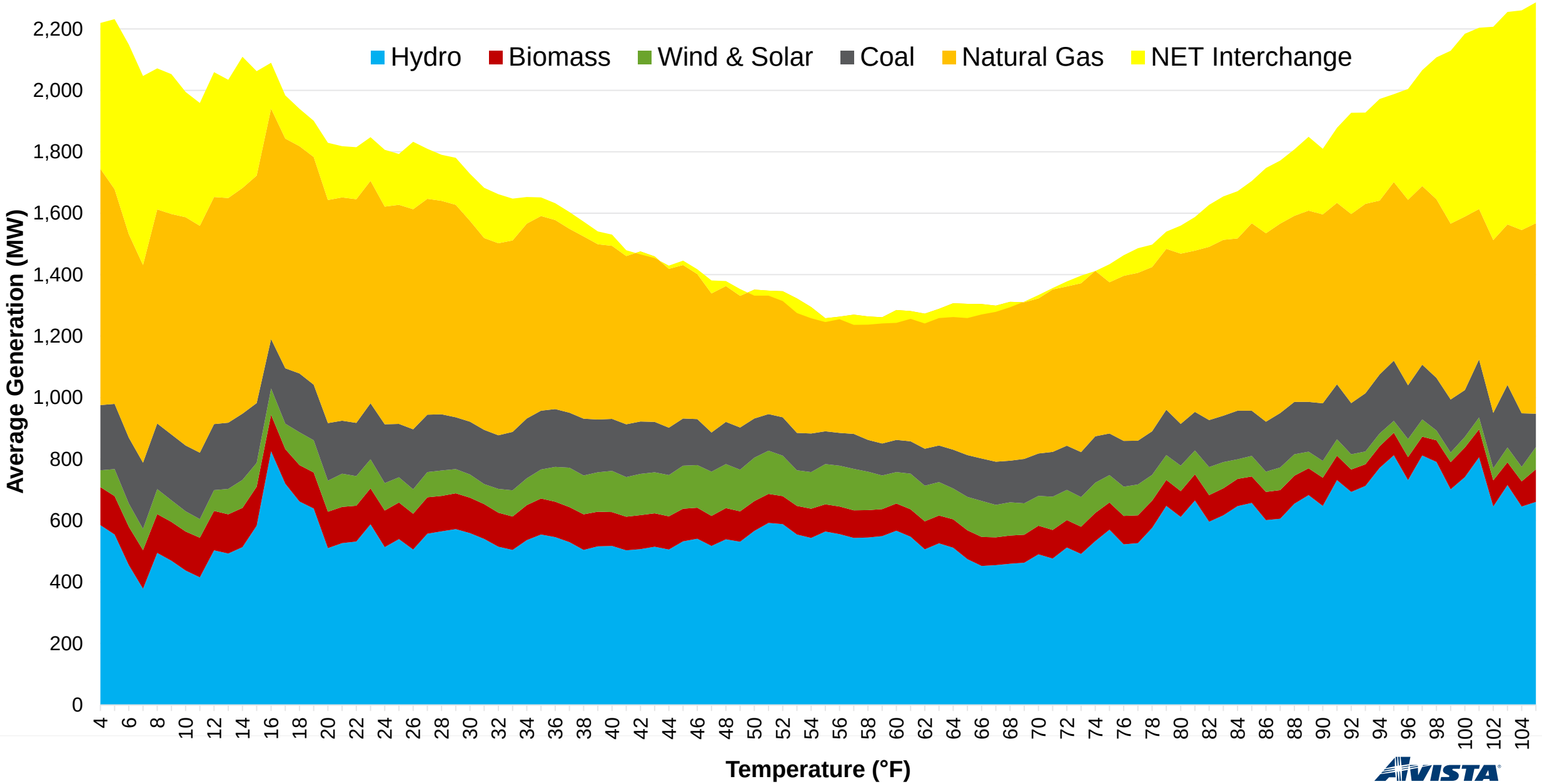
CETA: RCW 19.405.050

Clean energy implementation—Hydroelectric facilities—Special contracts.

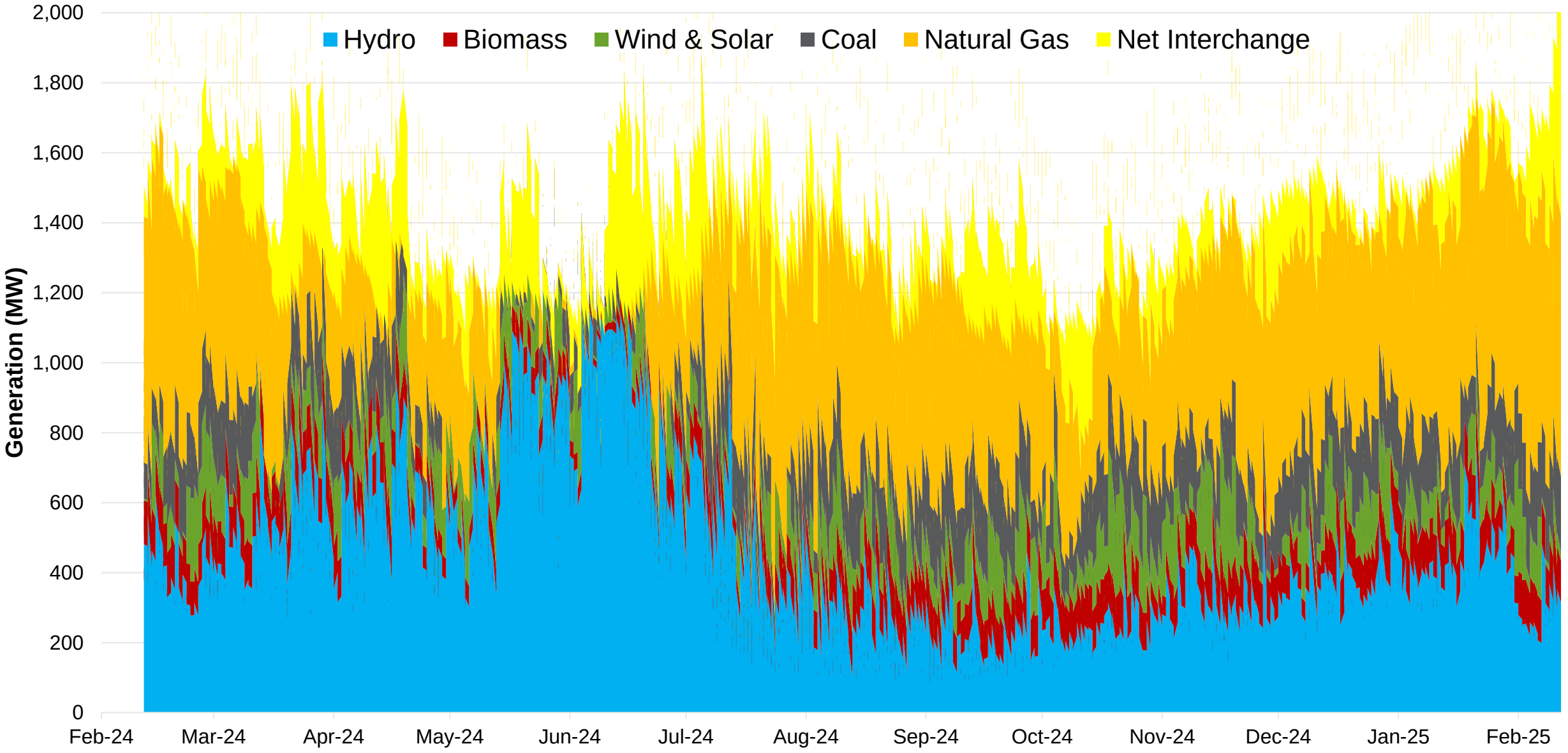
(1) It is the policy of the state that nonemitting electric generation and electricity from renewable resources supply one hundred percent of all sales of electricity to Washington retail electric customers by January 1, 2045. By January 1, 2045, and each year thereafter, each electric utility must demonstrate its compliance with this standard using a combination of nonemitting electric generation and electricity from renewable resources.

(3) In planning to meet projected demand consistent with the requirements of subsection (2) of this section and RCW **19.285.040**, if applicable, an electric utility must pursue all cost-effective, reliable, and feasible conservation and efficiency resources, and demand response. In making new investments, an electric utility must, to the maximum extent feasible:

Average Avista Area Generation by Temperature



Avista Area Generation (Feb 2024 – Feb 2025)



Q&A

Natural Gas Generation Efficiency

Resource ID	Segment Number	Heat Rate Operating Level (MW)	Heat Rate (BTU/hr)	Eff. (%)
N_EASTCT_1_A_B	1	22	14000	24%
N_EASTCT_1_A_B	2	65	12000	28%
RATHDRUM_1_1	1	51	13500	25%
RATHDRUM_1_1	2	90	11570	29%
RATHDRUM_1_2	1	51	13500	25%
RATHDRUM_1_2	2	90	11570	29%
KETTLEFL_1_CT	1	5	10000	34%
KETTLEFL_1_CT	2	8	10985	31%
BOULDRPK_1_1_6	1	3.5	9500	36%
BOULDRPK_1_1_6	2	25	9500	36%
LANCASTR_2_GEN_CC	1	170	7950	43%
LANCASTR_2_GEN_CC	2	293	8281	41%
COYOTESP_5_GEN_CC	1	140	7319	47%
COYOTESP_5_GEN_CC	2	322	7823	44%
Weighted Average Efficiency				**39%**

Source Energy – Heat Pump vs. Natural Gas

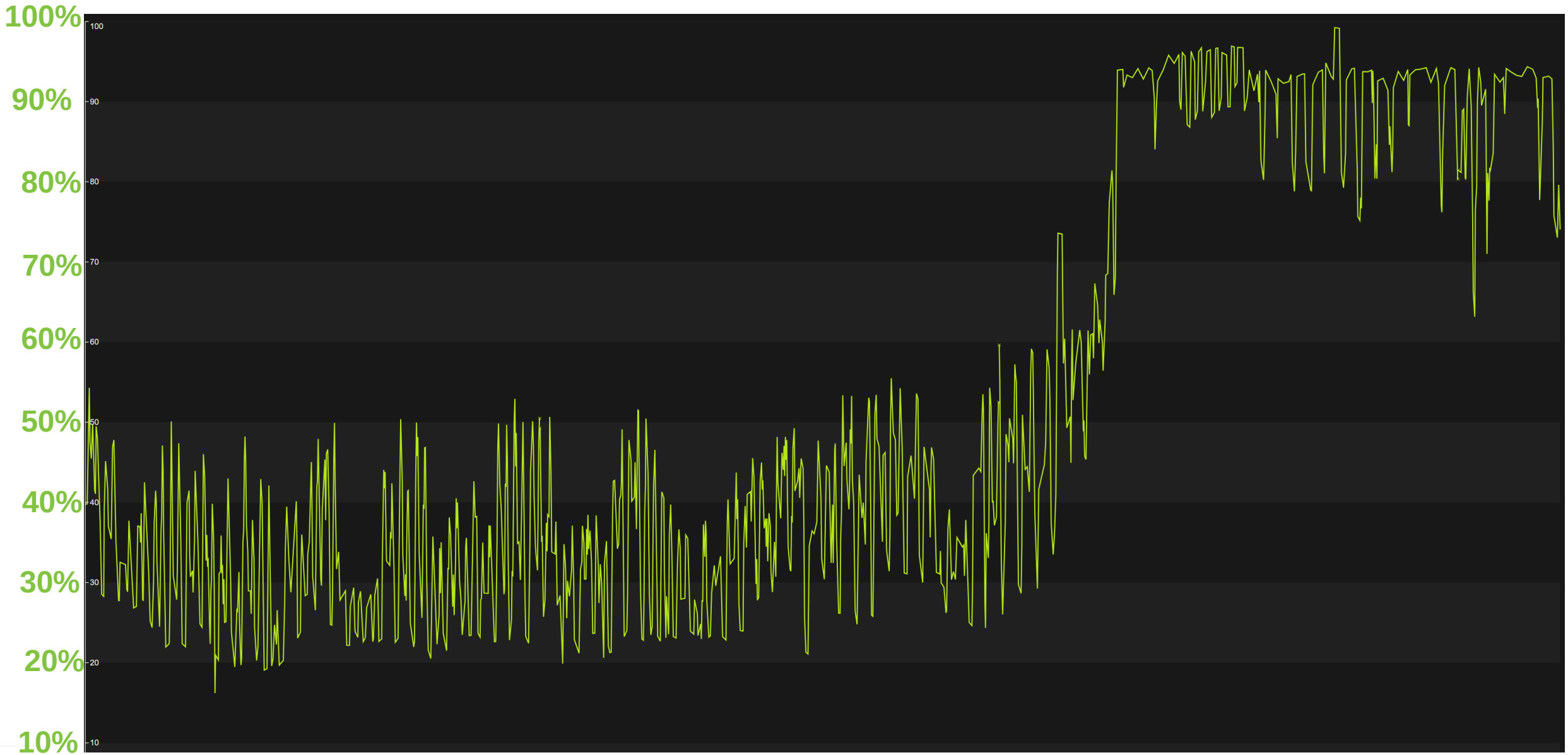
Power Delivery	Typical	Excellent	Poor
Generator Step-up Transformer (GSU)	98%	99%	98%
Transmission Power Line (High Voltage)	97%	99%	96%
Substation Power Transformer	98%	99%	98%
Substation Regulator	99%	99%	99%
Distribution Feeder (Medium Voltage)	96%	99%	88%
Distribution Mid-Line Regulator	99%		98%
Distribution Transformer	98%	99%	98%
Secondary Conductor	97%	99%	97%
Total Power System Loss	**83%**	**93%**	**75%**
Building Power System	**98%**	**99%**	**97%**
Natural Gas Generator	**39%**	**47%**	**29%**
Overall Efficiency of Electricity	**32%**	**43%**	**21%**

Heat pumps cannot achieve during cold temps!

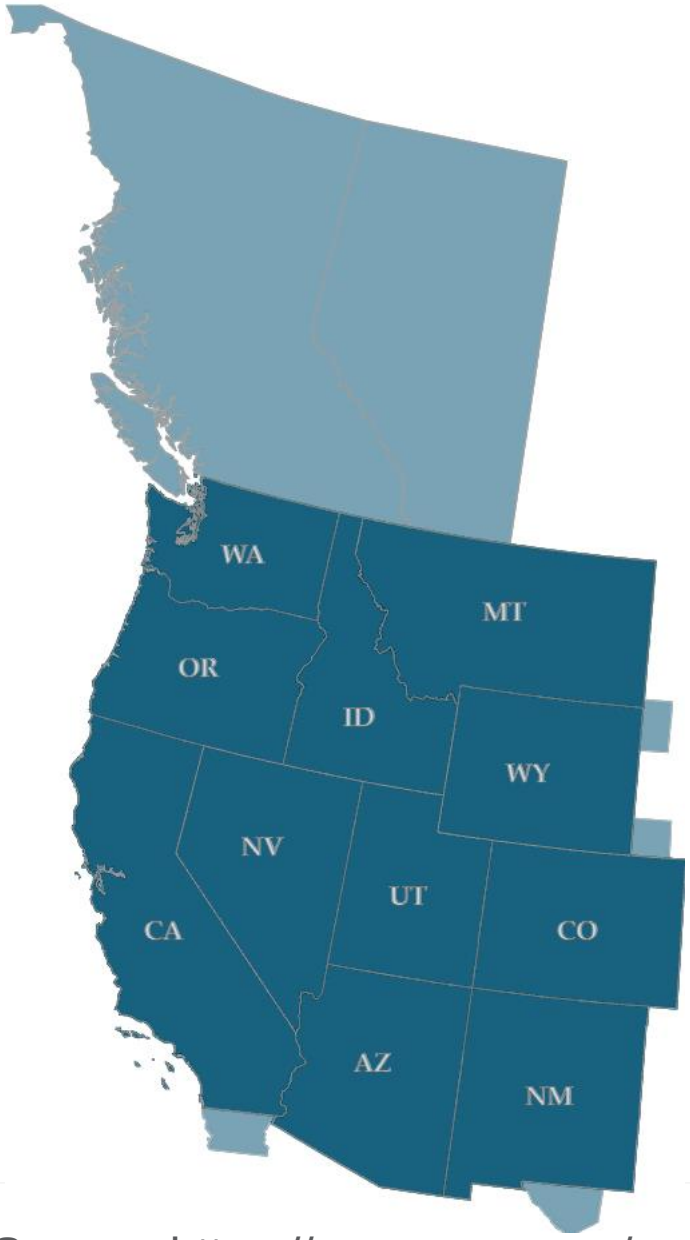
Heat Pump COP for Parity with:			
HE Gas Furnace (95%)	3.0	2.2	4.5
Std Eff. Gas Furnace (80%)	2.5	1.8	3.8

AVISTA

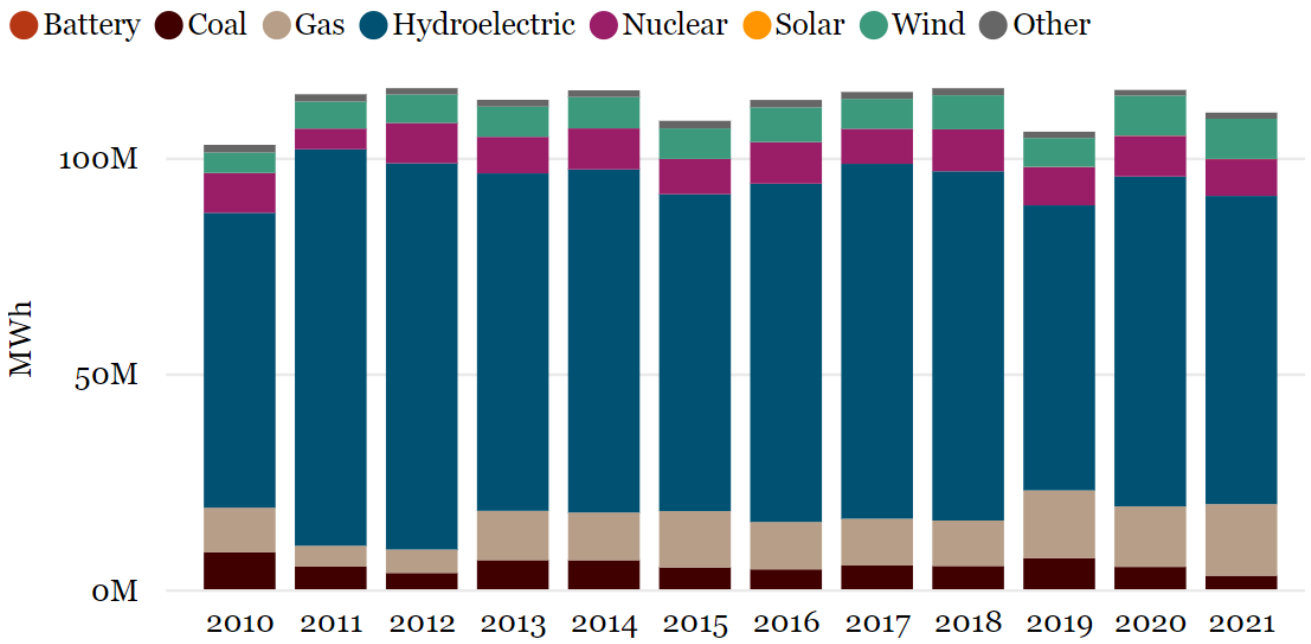
Avista's % Clean Power: March - May 2023



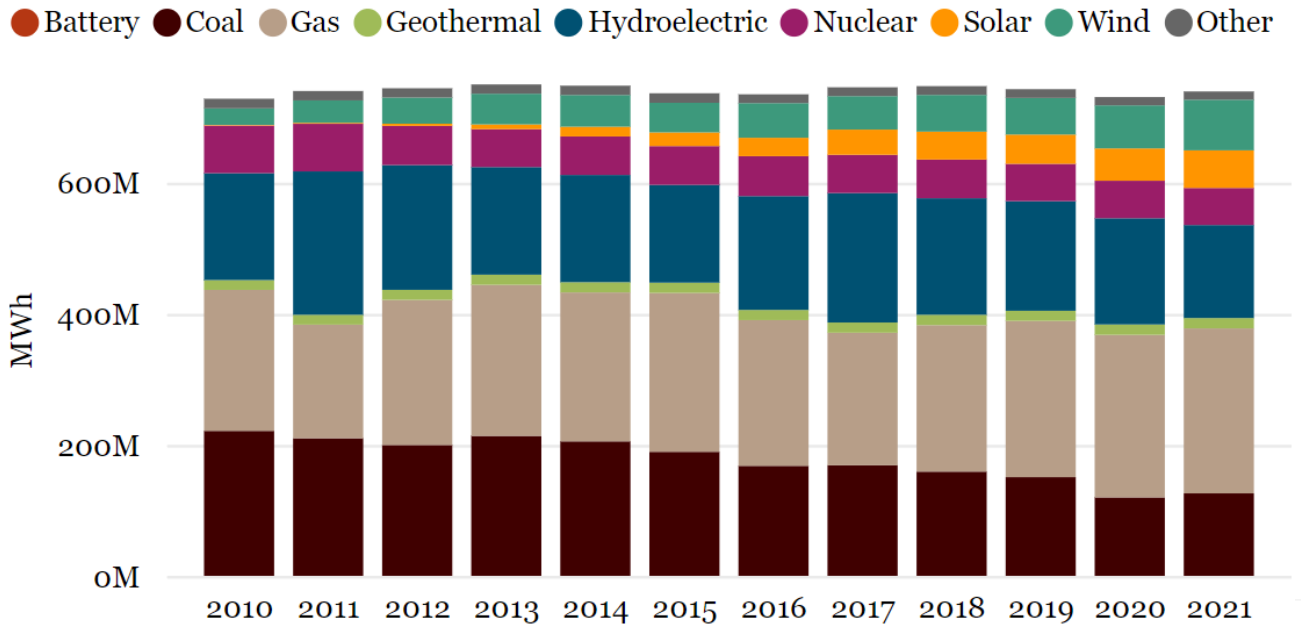
Average Generation Mix



Washington



WECC



Source: https://www.wecc.org/epubs/StateOfTheInterconnection/