

Firm demand-side capacity

FlexiWatt® - unparalleled flexible control for the largest unmanaged load on the grids.

Longest duration grid support available: up to 72 hours

“Capacity availability even before the utility knows it needs it”

Contracted control of existing heat-cable (snowmelt) demand,
with energy efficiency delivered every day.

200 MW proposed portfolio

A home: three independently controlled circuits

Representative 3,500 sq ft home. Each circuit: 1.9 kW warmed, 2.6 kW cold/wet



Illustrative home shown during a melt cycle.

TOTAL HEAT-CABLE LOAD

5.7 kW

3 × 1.9 kW warmed ON

7.8 kW

3 × 2.6 kW cold/wet ON

0 kW

All three heat circuits locked out

Each circuit / roof zone:
1 smart switch + 1 CV monitor

A ski-town home: six independently controlled circuits

Representative ON load per circuit: 1.9 kW warmed, 2.6 kW cold/wet



Conceptual zones, not installation wiring

TOTAL HEAT-CABLE LOAD

11.4 kW

6 × 1.9 kW warmed ON

15.6 kW

6 × 2.6 kW cold/wet ON

0 kW

All six heat circuits locked out

Each circuit / roof zone:
1 smart switch + 1 CV monitor

A business: 20 circuits become one capacity block

Each circuit: 1.9 kW warmed ON, 2.6 kW cold/wet ON, 0 kW in lockout



Conceptual groups. Each circuit has its own switch, meter and CV monitor.

TOTAL HEAT-CABLE LOAD

38 kW

20 × 1.9 kW warmed ON

52 kW

20 × 2.6 kW cold/wet ON

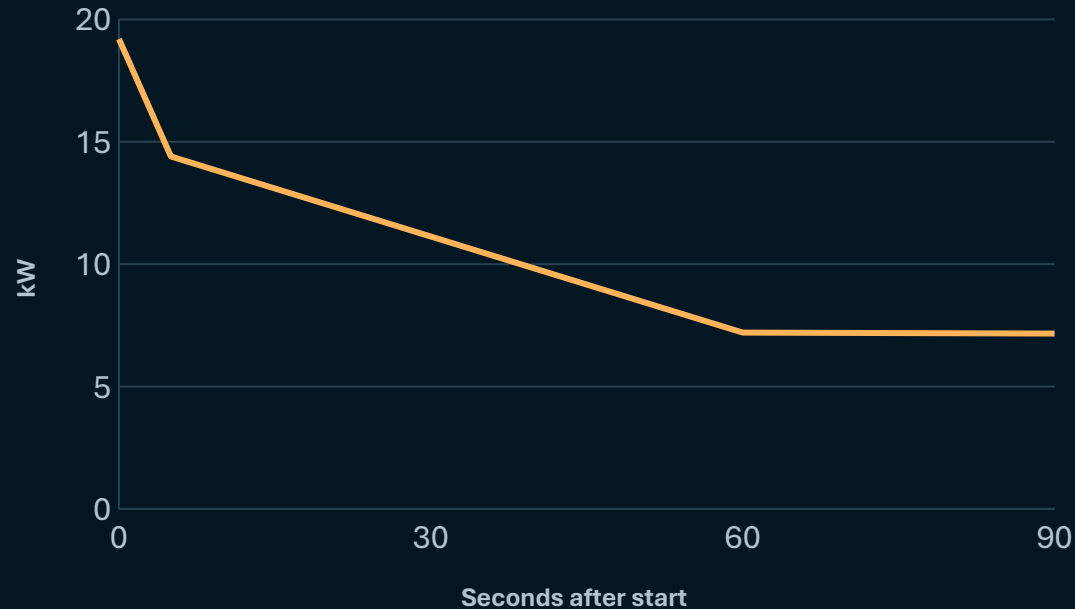
0 kW

All 20 heat circuits locked out

20 switches + 20 CV monitors
4 groups of 5 circuits

Cold starts create a much larger demand envelope

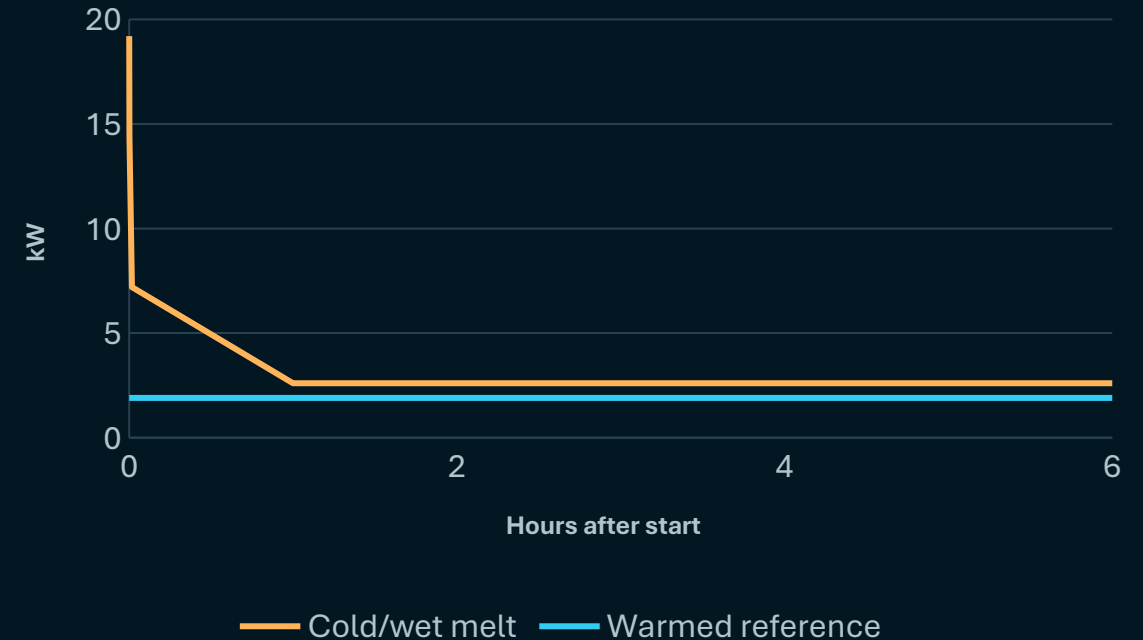
Illustrative 240 V circuit: reported current anchors converted to kW



80 A at startup = 19.2 kW

≈30 A within 10–90 seconds.

≈10–12 A after 30–90 minutes.



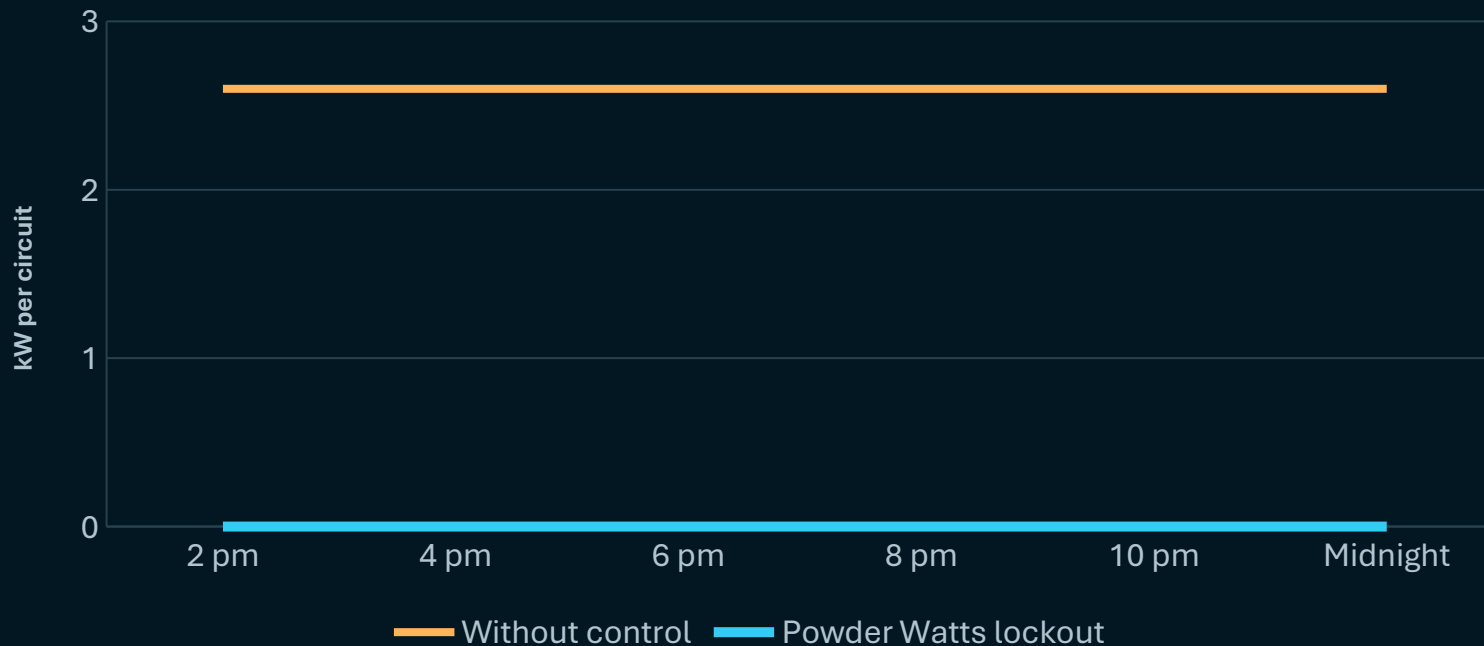
Peak charges depend on interval demand

Starts can raise customer and wholesale billed peaks.
Wholesale peak costs can turn co-op margins negative.

Powder Watts makes capacity in place before the peak begins

A 10-hour example: zero heat-cable demand from 2 pm to midnight

Cold / wet circuit without control: 2.6 kW ON



2 pm: already OFF

4–9 pm utility peak

All enrolled circuits stay at 0 kW through the peak.

After midnight

Utility releases groups to melt. Staggered starts keep inrush within the utility's power limit.

Contracted deferral: 2, 4, 7, 10 or up to 72 hours

Illustrative event. Contracted MW and duration reflect verified roof conditions.

Capacity is available in winter and summer

Systems left ON create year-round capacity that Powder Watts FlexiWatt® can create by holding waste OFF

Building type	Winter snow	Shoulder seasons	Summer
Commercial	ON	ON	ON
Second / third homes	ON	Many left ON	Some left ON
Primary residences	ON	Some left ON	Some left ON

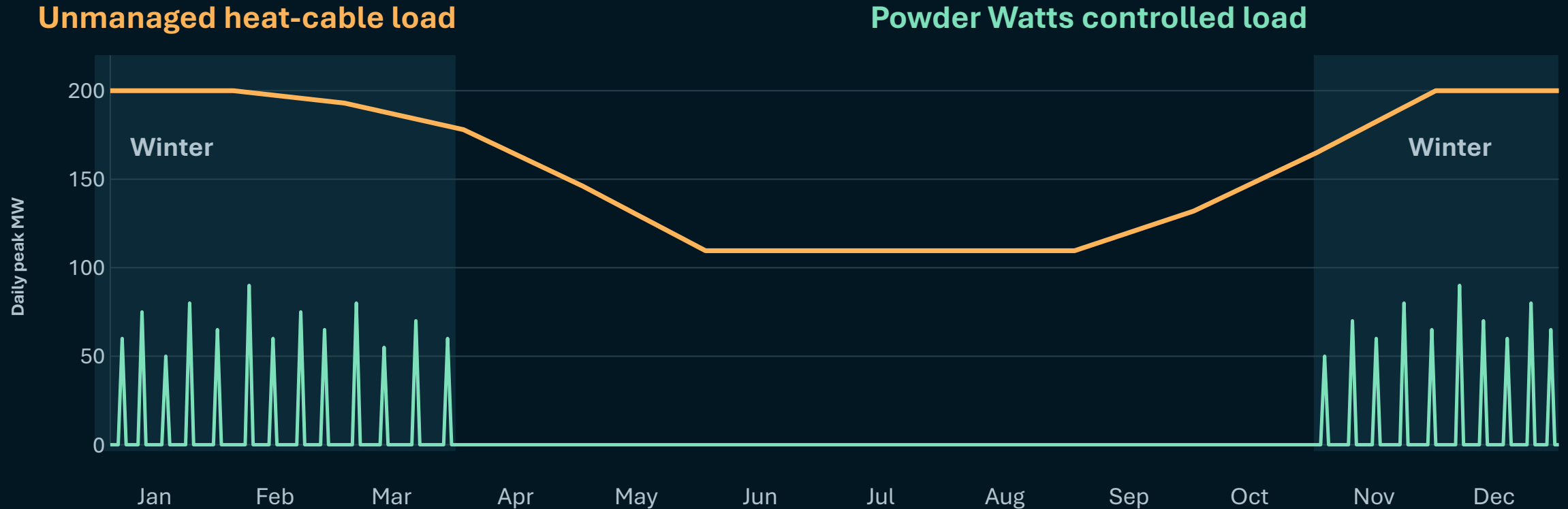
Many are left on in shoulder seasons.

Summer capacity combines commercial buildings and homes left ON.
Circuit metering establishes the firm MW available in each season.

ON describes operation without Powder Watts control. Homes that would otherwise normally switch OFF contribute no summer baseline in those hours.

Year-round load becomes utility-scheduled melting

200 MW winter cold / wet case. Systems left ON beyond winter remain an available load to hold OFF.



Summer example: ≈ 110 MW held OFF

Assumes all commercial + half of residential stay ON at the 1.9 kW warmed reference.

Winter melting follows utility release

Staggered restoration controls the return load.
Critical windows remain at zero.

Powder Watts FlexiWatt can support utilities by timing melting to occur during times of excess capacity – this effectively brings grid planning needs to near-zero.

Powder Watts is strongest when winter solar is weak

Winter solar is much weaker: the sun is lower and the days are shorter -- Solar can be paired with the FlexiWatt® offering

Grid condition	Solar output	Powder Watts Solution
Winter season	Lower sun + shorter days reduce available solar energy	Strong snowmelt demand available to hold OFF
Clouds and snow	Clouds and snow cover reduce solar output	Cold / wet load is higher: Still available to hold OFF
Winter evening peak	Zero PV output after sunset	Can deliver many MW of Zeroed Out heat- cable demand through the contracted peak

A strong pairing for winter reliability

The utility moves required melting into hours with extra capacity,
including available daytime solar production.

Solar seasonality and weather: U.S. Department of Energy. Capacity value follows local peak timing and verified load availability.

Firm capacity with circuit-level delivery confirmation.

FlexiWatt® is a class-leading IRP resource backed by utility control and circuit-level performance

Contracted seasonal MW

Define location, critical hours and duration.
Day ahead, spot, multiple durations, sub 10 min.

Guaranteed control

Prevent starts before peaks, shed active load,
and sustain zero heat-cable draw.

Actual ON and actual OFF

Every circuit is sub-metered. Commands are
logged, visual proof of switching and roof
conditions.

Performance accountability

Just 152 homes or 10 commercial buildings =
1MW of full-duration delivery and restoration.

Utah IRP pathway: utility-controlled or otherwise reliable load decrease per: 54-17-305

Utah Code §54-17-305(2) requires reliability and supply adequacy for the full period.

200 MW winter capacity plan for data-center growth

Winter planning basis: 2.6 kW per cold / wet circuit, verified in utility-critical hours

200 MW

Illustrative 50 / 50 residential / commercial split

≈12,821 homes

100 MW residential at 7.8 kW per home

≈1,923 commercial buildings

100 MW commercial at 52 kW per building

Same buildings at 1.9 kW warmed ON: ≈146 MW.

Gross winter sizing: 3 circuits / home, 20 / business. Contracted MW reflect tested seasonal delivery and availability.

Commercial terms

Highest qualifying firm-capacity rate for accepted seasonal MW

Payment for longer deferrals and utility dispatch rights

Energy-efficiency value alongside capacity, with each MW counted once

Voltus: Site kW and fleet availability

Yes. Establish the load in the actual PLC / afternoon windows, then aggregate eligible sites.

Representative site	Circuits	Warmed ON	Cold/wet ON	Lockout
Home	3	5.7 kW	7.8 kW	0 kW
Larger home shown	6	11.4 kW	15.6 kW	0 kW
Business shown	20	38 kW	52 kW	0 kW

Baseline and enrollable kW

Conventional event DR uses the accepted managed-load baseline. The firm program values verified avoided unmanaged demand, including summer ON cohorts, counted once.

Interval evidence to provide

Circuit and site IDs, timestamped kW/kWh, ON/OFF status, commands and seasonal use. Roll up by site, utility and critical window. Use 5–15-minute data if available.

General average numbers for planning assumptions.

Powder Watts: capacity with year-round savings: COMPARE

Year-round ON sites: 86% winter savings over 5 months, 100% OFF over 7 summer months.

Resource / cost basis	Capital per MW	Capital ÷ annual MWh	Event / delivered OFF equivalent	Capital per event-MWh	Winter MWh per MW	Winter + summer MWh per MW
Powder Watts Installed controls	\$385k	\$64	24 h OFF	\$16.0k	2,294 saved	6,028 saved
Thermostat VPP Operator cost	\$85k	\$2,125 DR \$190 EE ²	2 h setback 40 min extra OFF ¹	\$42.5k	Annual benchmark	40 DR 448 EE ²
Utility battery Installed system	\$1.232M	\$844	4 h discharge	\$308k	608 discharged	1,460 discharged

¹ Thermostat example: 2 h × 1 kW average reduction ÷ 3 kW compressor = 40 min extra OFF.

PW saves 5.96 MWh in winter and 15.67 MWh across the year, per circuit.

PW: \$1,000 installed/circuit. Energy uses 1.9 kW warmed draw. MW uses 2.6 kW cold/wet draw. Seasons divide 8,760 h into 5/12 and 7/12.

Thermostat DR: DOE, 20 × 2-hour events/year. ² EE: Nest (2015), 448 kWh/device-year case at DOE's 1 kW/device. DR and EE are separate.

Battery: NREL 2026 midprojection in 2024\$, one 4-hour cycle/day. Its MWh are discharge throughput. Thermostat source gives annual totals only.

Capital ÷ annual MWh uses upfront capital and one year's stated energy volume. O&M, charging costs, financing and asset life are excluded.

100 MW for \$38.5M in installed controls

66% less upfront funding • 12–31× more annual MWh saved per dollar¹

100 MW target	Heat-pump reference ¹	Powder Watts Winter savings	Powder Watts Winter + summer
Peak reduction / home	4.4 kW	7.8 kW	7.8 kW
Homes / upfront funding	22,728 / \$113.6M	12,821 / \$38.5M	12,821 / \$38.5M
Upfront funding / MW	\$1.136M	\$385k	\$385k
Funding ÷ annual MWh ²	\$1,972	\$168	\$64
Annual MWh saved / home	2.54	17.89	47.02
Annual MWh saved / fleet	57,614	229,388	602,812

~4 hours per PW home vs. 1–2 days for heat-pump installation

Existing-circuit retrofit: no HVAC replacement, refrigerant work or battery installation.

+100 MW data center – 100 MW accepted local relief = 0 MW added at the constraint

Utility path: target the constraint → verify all required hours → contract control → approve service.

¹ Heat-pump scenario: ACEEE resistance-heat replacement at SHARE’s \$5,000/home subsidy level; battery dispatch excluded.

PW: 3 circuits/home × \$1,000; 2.6 kW peak / 1.9 kW energy baseline. Winter: 5 months × 86% saved. Summer: 7 months OFF.

² Upfront dollars ÷ one year’s saved MWh. Summer assumes otherwise-ON homes: 73 MW warm relief. Local electrical rules apply.

Sources: ACEEE (2024); SHARE, Carrier, Powder Watts, Voltus. Funding model, full calculations and connection criteria in notes.



Photo: Peter Meglis

Thank you

Contact us
Powder Watts

info@powderwatts.com
powderwatts.com



Park City, UT

