DEER VALLEY CASE STUDY | OCTOBER 2026

DEER VALLEY RESORT × POWDER WATTS

Building protection with intelligent heat cable control

Building protection and winter savings across 46 managed switches and 111 kW



SNOW PARK LODGE | DEER VALLEY RESORT

111 kW OF MANAGED HEAT CABLE

111 kW

46 managed switches

2.413 kW average per switch

$27,099

estimated winter utility savings

Includes $10,069 demand savings

$0.15

per annual kWh saved

Utah custom rebate; caps apply

U.S. National Science Foundation

Federal research funding supporting technology development.

Amazon Web Services

Funding support for Powder Watts technology development.

NVIDIA Inception program

Program membership providing access to AI tools, training and startup resources.

Savings estimates use Schedule 6 rates effective September 25, 2026. Calculation details and sources are included.

303 METRIC TONNES OF CO_2 AVOIDED PER WINTER

Estimated carbon savings | 303 tCO_2e from CO_2 alone | Calculation and scope on page 7

BUILDING PROTECTION

Circuit monitoring and building protection

Deer Valley Resort's **111 kW of managed heat cable spans 46 switches**, averaging **2.413 kW per switch**. Powder Watts combines continuous circuit monitoring, automated control and fault alerts to protect roofs and drainage paths while reducing unnecessary energy use. Estimated winter utility savings total **$27,099**, with additional value from maintenance efficiency and longer cable service life.



EMPIRE CANYON LODGE



SILVER LAKE LODGE

Continuous circuit monitoring and alerting

Powder Watts continuously monitors electrical operation on **every connected circuit** and alerts facilities staff when a circuit requires attention. Roof imagery adds visibility into snow, ice and melt conditions, helping staff assess the affected area and prioritize maintenance.

Fault detection and maintenance response

A tripped breaker or failed heat cable can leave part of a roof unprotected without an obvious warning. Circuit-specific alerts identify the relevant panel and zone, including hard-to-reach locations. Staff can respond directly to the affected equipment, reducing routine trips to remote breaker boxes and shortening the time a fault remains unnoticed.

Remote seasonal control and health checks

Remote seasonal control eliminates visits made solely to switch managed circuits on in fall or off in spring. **Seasonal health checks identify unresponsive circuits before winter operation**, allowing inspection and repair to be scheduled before storms increase maintenance demands.

Targeted maintenance and operating records

Electrical histories, roof images and alert records show which circuits need attention and provide a documented basis for diagnosis. This reduces time spent locating equipment and confirming status, freeing electricians for repairs and preventive work. Continuous visibility also reduces uncertainty between scheduled inspections.

Automated operational health checks reduce routine status work and help target maintenance. Manufacturer-required steps should always be followed. [6]

"The Resort had been struggling with ice dams and the inability to see where areas of heat tape were not working, causing roof leaks and expensive repairs." Deer Valley Resort [1]

Winter savings and customer rebates

The 111 kW installation delivers value through lower electricity consumption and reduced billed demand. At the Schedule 6 rates used in this analysis, estimated winter utility savings total **$27,099**. The calculation covers six winter months and an **86% reduction in electricity use**. [2]

Winter savings measure	111 kW installation
Electricity avoided	418,115 kWh
Energy savings	$17,030
Demand savings	$10,069
Total utility savings	**$27,099**

Utility savings provide the core payback calculation. Seasonal labor savings, cable preservation and avoided building damage add economic value. The following section quantifies these benefits and their timing. All figures are before taxes and recurring Protect service costs.

Winter energy savings calculation

111 kW × 4,380 hours × 86% = 418,114.8 kWh avoided.
418,114.8 kWh × $0.0407300624/kWh = **$17,029.84**.

The energy calculation assumes six normalized winter months totaling 4,380 hours, a constant 111 kW unmanaged baseline and an 86% reduction in electricity use. It yields 418,114.8 kWh of avoided consumption. Schedule 6 rates are effective September 25, 2026. [2]

Rebates that reduce installation costs

Rocky Mountain Power, a division of PacifiCorp, offers Utah custom Powder Watts incentives of **$0.15 per annual kWh saved** for qualifying projects. Applied to 418,114.8 kWh, the savings-based calculation is **$62,717** before program caps and approval. This is a one-time installation incentive. [8]

Illustrative customer projects using the 111 kW savings profile. The examples apply the standard Utah retrofit limits: a 70% project-cost cap and an incentive adjustment that prevents simple payback from falling below one year. All project costs below are hypothetical. [8]

Illustrative installed cost	Illustrative rebate	Cost after rebate	Utility-only simple payback
$60,000	$32,901	$27,099	1.00 years
$100,000	$62,717	$37,283	1.38 years
$150,000	$62,717	$87,283	3.22 years

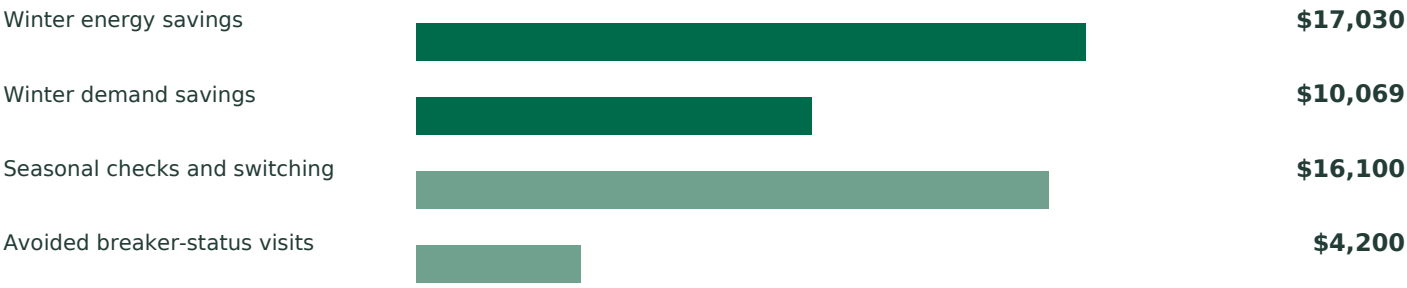
Payback uses $27,099 in winter utility savings per year, with no non-winter savings assumed. The $60,000 example is limited by the one-year rule; the other examples are limited by the kWh calculation. Awards, eligible costs and savings require utility approval. Fees and incremental maintenance increase payback; program terms vary by state. [8]

Economic value beyond utility savings

Estimated winter utility savings of $27,099 and illustrative annual labor value of $20,300 create $47,399 in combined operating value. Cable preservation and **earlier fault detection can also reduce capital and building-repair exposure**. The values below identify the assumptions behind each benefit.

Recurring utility savings and labor value

Dollars per operating year. Utility estimates include one winter; labor values are illustrative.



$27,099 utility savings + $20,300 labor value = $47,399 per operating year

Seasonal work: 46 circuits × 2 rounds × 1 hour × $175/hour = $16,100. Avoided status visits: 8 visits × 3 hours × $175/hour = $4,200. Contractor and overtime reductions can create cash savings; reassigned staff time creates maintenance capacity. These labor amounts are counted once.

Cable preservation and building protection

Benefit	Illustrative value and calculation	How the value is counted
Cable replacement deferred	$23,000 postponed: 10% of an illustrative $230,000 cable portfolio. A five-year deferral at 6% has a $5,813 present value.	Capital timing benefit; excluded from the annual operating subtotal.
Water damage avoided	$25,000 per avoided incident. One such incident prevented over five years equals $5,000/year on an undiscounted planning basis.	Risk-reduction scenario; excluded from the recurring cash-payback calculation.
Audit records and operating continuity	Circuit-level records support WattCarbon verification, targeted maintenance and documented response. No separate dollar value assigned.	Avoids double counting labor. No carbon-credit revenue, insurance savings or lost-revenue recovery assumed.

The $25,000 incident is a budgeting assumption for water remediation and building repairs, not a measured Deer Valley loss. It excludes heat-cable replacement and routine labor already valued above. Actual benefit depends on preventing or limiting damage; closures, guest disruption and loss of usable space are additional unpriced exposures.

From economic value to cash payback

Net annual cash benefit = utility savings + documented cash labor savings − Protect fees − incremental maintenance costs.

The rebate reduces the initial investment once. Cable deferral and avoided damage are evaluated separately over their own time horizons. Required electrical inspections and repairs remain in the maintenance budget.

DEMAND SAVINGS ANALYSIS

Winter demand savings methodology

Estimated winter demand savings are **$10,069**. This estimate assumes an average **87.04 kW reduction in monthly billed demand** across the 111 kW installation, or **78.42% of managed load**, over six winter months at $19.279461 per kW-month.

111 kW connected load



87.04 kW estimated demand reduction 23.96 kW allowance

Input	Value and calculation
Confirmed managed load	111 kW across 46 switches
Average load per switch	111 ÷ 46 = 2.413 kW, or about 2.41 kW
Winter power + facilities rate	$14.697537 + $4.581924 = $19.279461/kW-month
Demand reduction assumption	$10,069 ÷ (6 × $19.279461) = 87.0443 kW
Share of managed load	87.0443 ÷ 111 = 78.42%
Estimated winter demand savings	87.0443 kW × $19.279461 × 6 ≈ $10,069

Demand savings assumptions

Heat cable energized during a building's monthly peak contributes to billed demand. The calculation assumes that controls reduce this contribution by 78.42%, with **23.96 kW** remaining outside the estimated reduction. This allows for continued snowmelt operation and variation in when building peaks occur.

Demand savings are engineering estimates and require verification against utility interval data and billed monthly peaks. The 78.42% demand assumption is independent of the 86% energy reduction. Realized savings depend on each meter's monthly peak and the applicable tariff.

Schedule 6 bills demand using each meter's highest monthly 15-minute demand. Avoided demand is the difference between the unmanaged and controlled monthly maxima, summed across meters. Best estimates shown above. [2]

ADDITIONAL SUMMER SAVINGS

Across large commercial properties, heat-cable breakers are spread among panels throughout the site, many in hard-to-reach locations. Facilities teams must locate, access and switch every circuit off in spring, then return to turn each one on in fall. Limited staff time and competing maintenance demands can leave circuits energized year-round; a missed fall restart creates the opposite risk, leaving a roof or drainage path unprotected when snow returns.

Powder Watts addresses both problems through remote seasonal control, circuit-level monitoring and fall health checks. Teams can confirm shutdown and winter readiness without visiting every panel solely to operate breakers. Idaho Power guidance reported by Powder Watts supports including summer savings where commercial heat cable would otherwise remain energized. [9] The savings calculation therefore includes avoidable summer operation; an assumed spring shutdown would overlook that waste.

About $24,380 in potential summer utility savings

Full-load illustration for June–September: 122 days × 24 hours = 2,928 hours. Assumes the full 111 kW would otherwise remain energized and can be shut off when snowmelt is unnecessary.

Energy avoided: 111 kW × 2,928 hours = 325,008 kWh.

Energy savings: 325,008 kWh × $0.04605878/kWh = $14,969.47.

Demand: 111 kW × 4 months × $21.194039/kW-month = $9,410.15.

Uses Schedule 6 summer charges and the same September 25, 2026 rate basis as the winter analysis. [2, 2a] Energy savings depend on actual summer draw and avoided runtime; circuits already switched off create no additional energy savings. Demand savings require a 111 kW reduction in each of the four monthly billed peaks.

This illustrative summer opportunity is separate from the winter savings, rebate examples and recurring operating-value subtotal.

Maintenance efficiency and cable life

Remote control and automated health checks reduce the time needed to manage heat cable across dispersed resort buildings. Seasonal panel rounds and routine breaker-status visits can be replaced with remote checks and targeted field response, allowing skilled personnel to concentrate on equipment that needs service.

Illustrative annual labor value of $20,300

Avoidable status work	Illustrative annual time	Labor value at $175/hour
Spring and fall switching and functional-status rounds	46 circuits × 2 rounds × 1 hour = 92 hours	$16,100
Status-only diagnostic visits avoided through remote triage	8 visits × 3 hours = 24 hours	$4,200
Total potential staff capacity released	116 hours	$20,300

The labor estimate covers travel, equipment access, circuit identification and routine operational checks. Required electrical testing and repairs are excluded. At the stated assumptions, **116 hours of annual work represent $20,300 in labor value**. Lower contractor charges and overtime can produce cash savings; reassigned staff hours increase maintenance capacity.

Extending the value of installed cable

At an installed replacement allowance of **$20 per foot**, a 250-foot circuit represents **$5,000** in replacement cost. An illustrative portfolio of 46 circuits averaging 250 feet contains **11,500 feet of cable with a $230,000 replacement cost**. Actual cable lengths, access requirements and contractor pricing determine project costs.



At a fixed reference draw, an 86% energy reduction over a 4,380-hour winter corresponds to **613.2 equivalent energized hours** and **3,766.8 equivalent energized hours avoided per circuit**. Ten comparable winters would avoid 37,668 equivalent operating hours. Actual operating time varies with self-regulating cable power.

Reducing unnecessary energized hours limits cumulative operating exposure and can help extend heat-cable service life. At **$20 per foot to replace installed cable**, preserving existing equipment has material value. The amount of life extension depends on installation quality, moisture, physical damage and thermal cycling; no fixed extension in years is assumed in the payback calculation.

Deferring 10% of the illustrative $230,000 cable portfolio postpones $23,000 in replacement spending. If delayed five years at a 6% discount rate, the present value of the deferral is $23,000 − $23,000 ÷ 1.06^5 = $5,813. The five-year delay is an illustrative valuation assumption, not a measured service-life extension. The replacement cost remains payable later.

Circuit level emissions verification

Circuit-level measurement gives sustainability teams traceable evidence of electricity use and avoided emissions. Energy records, baseline calculations and emissions factors support **independent WattCarbon verification** and allow reported CO_2e reductions to be traced to the contributing circuits and reporting periods.

WattCarbon measurement and verification

Powder Watts uses WattCarbon for independent measurement and verification of device-level energy savings. WattCarbon's published methodology uses hourly device and socket data, calculates savings against a seasonal-controls baseline and aggregates results to the site. The audit process checks data completeness and reconciles submitted savings against independently calculated values. [3]

Record	What the reviewer can trace
Circuit and operation	Device, socket, building, mapped circuit and timestamped consumption
Energy and CO_2e	Baseline, measured use and applicable location/time emissions factors
Verification and claim	Reporting period, methodology version, review record and any certificate or retirement identifier

Avoided emissions calculation

Avoided CO_2e in metric tonnes = Σ (verified avoided kWh × applicable kg CO_2e/kWh) ÷ 1,000. Emissions reductions are calculated for each device and reporting interval, then aggregated by building and portfolio. Retained inputs and methodology records allow reported totals to be reproduced. [3,4]

Each reported total retains the circuit measurements, baseline, timestamps and applicable emissions factors needed to reproduce the calculation. This provides an auditable record from individual circuits to the resort total and supports consistent sustainability reporting.

Verification and audit records

WattCarbon verification records identify the devices, reporting periods and methodology covered by each review. Final CO_2e totals are calculated from verified savings and the applicable emissions factors for those periods. This approach gives facilities, finance and sustainability teams a common set of traceable operating records. [3,4]

Avoided emissions are calculated from measured electricity data and a defined baseline. Carbon-offset claims require the corresponding issuance, ownership and retirement records. [3,4]

Operational and financial accountability

The same circuit records that support energy and emissions verification also document equipment performance and maintenance response. Facilities managers gain operating visibility, finance teams gain a basis for assessing savings, and sustainability teams gain a reproducible audit trail.

ESTIMATED CARBON SAVINGS | DEER VALLEY RESORT

303 **METRIC TONNES OF CO_2 AVOIDED PER WINTER**

Equivalent to 303 metric tonnes CO_2e from CO_2 alone.

418,114.8 kWh × 0.72446 kg CO_2/kWh ÷ 1,000 ≈ 303 metric tonnes CO_2

POTENTIAL SUMMER SAVINGS

+235 metric tonnes CO_2

COMBINED WINTER + SUMMER POTENTIAL

538 metric tonnes CO_2

EPA eGRID2022 NWPP marginal factor (ZIP 84060), including 5.1% line losses. CO_2-only estimate; CO_2e here covers CO_2 alone; CH_4/N_2O are excluded. This is not a verified carbon-offset credit total. Summer assumes all 111 kW would otherwise run June-September (page 5).

EPA calculation source

Calculation methodology and sources

Scope and assumptions

The installation comprises **46 switches and 111 kW of managed load**. The analysis uses a 4,380-hour winter, an 86% reduction in electricity use and $10,069 in estimated winter demand savings, based on an 87.04 kW average billed-demand reduction. Labor hours, cable lengths, replacement timing, damage scenarios and customer installation costs are illustrative. Rebate examples use the Utah custom non-lighting rate and standard retrofit caps. [8]

Tariff calculation

Using the September 25, 2026 Schedule 6 price summary: energy/power multiplier F = (1 + 0.0982 − 0.0061) × (1 + 0.0360 + 0.0015) + 0.0134 = **1.14645375**. Facilities multiplier G = 1 + 0.0360 + 0.0015 + 0.0134 = **1.0509**. Thus winter energy = $0.035527 × F = $0.0407300624/kWh; winter demand = $12.82 × F + $4.36 × G = $19.279461/kW-month. [2]

The calculation excludes taxes, fixed customer charges and voltage discounts. The 1.34% Schedule 92 adjustment expires December 31, 2026. Budgets require the rates applicable to each billing period. The six-month operating season used here falls within Schedule 6's October–May lower-rate period.

Sources

[1] Deer Valley customer case study and Victoria Schlaepfer statement

[2] Rocky Mountain Power Utah Price Summary and Schedule 6

[2a] Schedule 6 demand definitions and voltage discount

[2b] Schedules 92, 193 and 198 rider applicability

[3] WattCarbon PowderWatts Measurement and Verification Plan, August 18, 2025

[4] OpenEAC Seasonal Consumption Controls and Shared Guidelines

[5] NSF SBIR Phase I Award 2224907, $274,922

[6] BARTEC: insulation-resistance testing for heat-tracing cables

[7] NVIDIA Inception program benefits and membership

[8] Rocky Mountain Power Utah Schedule 140, custom non-lighting incentives and caps

[9] Powder Watts operational account and reported Idaho Power guidance on commercial heat-cable operation and summer savings. Project-specific savings require baseline verification.

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