City of Ketchum

CITY COUNCIL MEETING AGENDA MEMO

Meeting Date:	August 18, 2025	Staff Member/Dept:	Paige Nied, Associate Planner Robyn Mattison, City Engineer Eve Preucil, Blaine County Sustainability Coordinator

Agenda Item:	Recommendation to review and provide policy direction regarding snowmelt installation within the public rights-of-way.

Recommended Motions:

Motion Option #1: I move to approve the proposed right-of-way snowmelt policy and direct staff to draft the ordinance.

Motion Option #2: I move to continue the right-of-way snowmelt policy discussion to a date certain with additional information prepared by staff as directed.

Motion Option #3: I move to continue/table the right-of-way snowmelt policy discussion to a date uncertain and direct staff to bring ROW snowmelt requests to Council for decision on a case-by-case basis.

Reasons for Recommendation:

- On April 3, 2023, the City Council gave a policy directive that they would no longer approve of applications for residential snowmelt systems within the City right-of-way as it impeded the City's sustainability efforts. This excluded areas where a snowmelt system was required by City departments for public safety, access, or street maintenance reasons.
- Since the Council's policy directive, staff has encountered challenges with its practical implementation.
- On May 19, 2025, Staff presented a revised snowmelt policy to City Council that allows for snowmelt systems within the right-of-way with additional mitigation measures to better meet the goals of the 5B Can Climate Action Plan and result in a greater overall environmental impact than prohibiting them outright.
- In general, the Council did not feel the proposed policy adequately deterred the installation of snowmelt systems and requested staff to reconsider alternatives including the in-lieu fee payment or other deterrent measures that resulted in a better tradeoff for the use of the right-of-way.
- The policy has been updated to replace the renewable energy requirement with a right-of-way usage fee, which includes full and partial exemptions to the fee for onsite renewable energy generation to offset the energy demand of the snowmelt system.

Policy Analysis and Background:

BACKGROUND

On May 19, 2025, staff presented the City Council with a policy option for snowmelt systems within the right-of-way (ROW). The staff report from that meeting is included as Attachment 1 and the recording of that meeting can be viewed here. The proposed policy included design and operational standards to ensure energy efficiency, along with a renewable energy requirement to offset the emissions generated from snowmelt system. Compliance options for the renewable energy requirement included: 1) enrollment in the local utility provider's renewable energy credit (REC) program, 2) onsite renewable energy generation, or 3) fee in-lieu payment.

While the Council supported the proposed design and operational standards, they raised significant concerns with the REC program. Council members questioned the enforceability of this option, stating that tracking and verifying ongoing participation in a third-party REC program would be difficult for City staff to monitor and regulate. They also expressed discomfort with the City relying on a program that is administered by a private entity which they have no control over and could be modified or discontinued at any time. Additionally, some Council members felt that this option did not sufficiently mitigate the environmental impacts of snowmelt systems, specifically their high energy consumption and associated carbon emissions. They emphasized that this option was not an adequate tradeoff and that they were interested in a policy approach that discourages the installation of snowmelt systems in the community through stronger deterrence mechanisms. The Council requested staff to reconsider alternatives including the in-lieu fee payment and design the policy to be a stronger deterrent to the installation of snowmelt systems.

Since the meeting in May, staff conducted a more detailed analysis of the in-lieu fee option of the policy. Initially, staff proposed that the in-lieu fee would be based off the cost equivalent of installing solar onsite. However, after consulting with a local solar developer, staff learned that in most cases, solar systems alone would not likely offset the total energy demand of a snowmelt system due to factors such as limited solar exposure and winter conditions preventing energy generation. As Council expressed a desire to ensure the snowmelt system is fully mitigated, the initial in-lieu fee methodology does not work. This led staff to explore alternative methods for calculating the in-lieu fee that is aimed at achieving comprehensive, local carbon emission mitigation.

The revised policy framework replaced the renewable energy requirement with a ROW usage fee with exemptions for onsite renewable energy generation to allow for flexibility in compliance. The revised approach aims to deter the installation of snowmelt systems unless it is offset through onsite renewable energy generation or pay a fee that reflects the public cost of the system's impact on local resiliency. Energy is a public good, and the significant energy demand from snowmelt systems has broader implications for environmental resilience, grid capacity, and resource management. These systems not only contribute to increased carbon emissions but also place additional strain on local energy infrastructure, particularly during peak winter months. Therefore, the policy was updated to better account for these collective impacts by introducing a ROW usage fee that functions as both a financial deterrent and a tool for internalizing the external costs associated with snowmelt systems. The calculation for the fee is now based on the regionally accepted cost of carbon emissions. Revenue from these fees will be reinvested into municipal energy efficiency and sustainability initiatives, ensuring that the policy not only mitigates individual impacts but also contributes to wider community benefits and climate action goals.

The revised policy language underwent a legal review to ensure enforceability and defensibility. In addition, staff held multiple meetings with the Ketchum Sustainability Advisory Committee (KSAC) to review the changes, gather feedback, and incorporate recommendations. The key revisions to the policy include:

1. ROW Usage Fee
    - The ROW fee is a one-time payment based on the entire system's energy usage, and the calculation is based on the regionally accepted cost of carbon.
    - Exemptions are provided for properties with existing or proposed onsite renewable energy systems that can fully or partially offset the snowmelt system's energy use. For partial onsite offsets, a fee payment for the remaining energy demand drawn from nonrenewable sources is available.
    - Developments in the Community Core where snowmelt is required are exempt from the ROW usage fee.
    - All new snowmelt systems installed, whether for municipal or private development, are required to comply with the design and operational standards.
    - Fees collected will be put into a dedicated fund for municipal projects related to energy efficiency and sustainability.
2. Updated Insulation Requirements
    - Insulation remains a design requirement, but the previously specified R-value has been removed.
    - Property owners may now propose an insulation type that will be reviewed and approved by the City Engineer as part of the ROW encroachment permit process on a case-by-case basis.
3. High Efficiency Boiler
    - The previous policy required the installation of a high efficiency boiler when repairing an existing snowmelt system; however, this requirement was not reflected in the system design and operational standards. A high efficiency boiler is now included in the system design and operational standards for systems that elect to use a boiler.

The policy revisions are intended to establish a more balanced and effective approach to managing the energy demand and carbon impact of snowmelt systems in the ROW. By linking the policy directly to the energy demand and incorporating flexible compliance options, the updated framework aligns infrastructure considerations with the City's broader climate and sustainability goals. Below is a summary of the ROW fee calculation methodology, supporting data analysis, and outline of the draft policy.

ROW USAGE FEE CALCULATION

The total cost for the installation of a snowmelt system will include an administrative fee for the ROW encroachment permit as well as a ROW usage fee. The ROW usage fee is calculated by applying the local utility provider's current carbon adder to the energy consumption of the snowmelt system. A carbon adder is a pricing component added to electricity generation to reflect carbon pollution profiles of various power plants. It is a pricing variable used by various states in the Western Electricity Coordinating Council (WECC), and as such, influences electricity pricing across the entire region, including Idaho Power's Service Territory. Idaho Power's 2025 Integrated Resource Plan (carbon adder section included as Attachment 5) uses a carbon adder that reaches $143/ton of CO2e by the end of the planning period in their risk assessment modeling. As Idaho Power's planning period is 20 years, and the anticipated lifetime of snowmelt system is approximately 30 years, staff and legal determined that this price is the most defensible model. Idaho Power updates their Integrated Resource Plan every two years; therefore, it is important that staff and KSAC revisit the carbon adder every two years to ensure the calculation for the fee is using the most current and accurate information available. If a future Integrated Resource Plan does not include a carbon adder in their risk modeling, the current carbon adder referenced in the ROW usage fee calculator could still be referenced since it's price is anticipated to remain applicable in the WECC for 20 years, unless KSAC determines a more applicable source for the fee.

Applicants will use a spreadsheet tool developed by the City to estimate the annual energy usage (in BTUs) needed to heat their entire snowmelt system. They'll enter project-specific inputs, such as the driveway area, system efficiency rating. The tool will compute the average yearly energy use for a typical snowfall season, projected over a 30-year lifespan. It does this using fixed assumptions (local snowfall-season runtime in Ketchum, carbon emission factors, etc.) to ensure consistency across all applications. An example of the snowmelt ROW usage fee calculator can be found in Attachment 4.

DATA ANALYSIS

Previous data analysis by staff explored carbon dioxide emissions from the three most common snow removal practices; snowmelt systems, snow plowers and haulers, and snowblowers. Staff then converted the pounds of CO2 to vehicle miles traveled equivalent (VMTe) to help illustrate emissions produced from each snow removal technique. Results found that snowmelt systems emit nearly 10 times the emissions as snow blowers and snowplows, 1079 VMTe compared to 51 and 77, respectively. This proved that snowmelt systems are an excess energy burden.

Staff then analyzed the emissions from snowmelt systems on three different sized driveways. The three driveways, outlined in Table 1 below, represent three actual driveways in Ketchum that were recently approved to install hydronic snowmelt systems on private property that extend into the ROW.

Table 1 – Ketchum Driveway CO_2 Emission Summary

	Small Driveway	Medium Driveway	Large Driveway
Full Driveway Size (including ROW) (ft^2)	683	2,114	4,050
Energy Use (BTU/hr)	102,480	317,100	607,500
Energy Use per Year (BTU)	15,679,440	48,516,300	92,947,500
CO_2 emissions per year (lbs)	1,829	5,659	10,842

Most recently, staff expanded the data analysis to calculate how a ROW usage fee based on Idaho Power's carbon adder may be calculated. The formula assumes a lifespan of the snowmelt system of 30 years and calculates a one-time fee that includes the carbon adder for the entire lifespan.

ROW Usage Fee Formula:

ROW Usage Fee = ((((Energy use of system – renewable energy produced onsite) x carbon emission factor) x carbon adder) x lifespan of system)

An excel calculator will be provided to applicants if they wish to submit a ROW encroachment permit. The calculator will have space for applicants to enter details about their desired system, including size and efficiency, as well as any onsite renewable energy generation. It will then auto-calculate CO2 emissions and the associated ROW usage fee. Table 1 provides an example calculation for the ROW usage fee for a 683 square foot driveway with no renewable energy production onsite. It is important to note that among recent permit applications, this is a small driveway.

Table 1 – Example ROW Usage Fee Calculation

Onsite Renewable Energy Generation	
Type of Energy Generation	NA
Size of System (kW)	0
Yearly Generation Capacity (kWh)	0
Snowmelt System Size and Specs	
Total Driveway Area for Snowmelt System (SF)	683
Efficiency of Installed System (BTU/hr*sf)	150
Energy Use for Operation (BTU/hr)	102,450
ROW Usage Fee Calculation	
Energy Use Per Year (million BTUs)	15.67
Renewable Energy Generation Onsite (million BTUs)	0
Remaining Energy Use to Be Paid by Fee (million BTUs)	15.67
Remaining CO2e emissions per year (tons)	0.91
Carbon Adder ($/ton/year)	143
ROW Usage Fee ($)	3,922.07
Administrative Fee ($)	1200
Total Fee ($)	5,122.07

The use of the carbon adder in the ROW usage fee greatly improves upon previous fee calculations. In the previous policy proposal, staff proposed utilizing the local utility provider's REC program to offset the additional energy burden of snowmelt systems. This new proposal, utilizing the carbon adder as well as an administrative fee, would create a greater deterrence to build snowmelt systems in the ROW, in alignment with the stated goals of the policy. Table 2 below compares the proposed policies and associated fees for a driveway that is 683 square feet and no renewable energy generation onsite.

Table 2 – Policy Comparison

	Previous proposal with REC offset	Updated proposal with carbon adder
Requires efficient temperature and precipitation operational standards	Yes	Yes
Allows onsite renewable energy generation to offset ROW usage fee	Yes	Yes
Includes an administrative fee in addition to ROW usage fee	No	Yes
ROW usage fee for small driveway and no onsite generation (683 ft^2)	$1,378.61	$3,922.07
Total fee for small driveway with no onsite generation (including administrative fee)	$1,378.61	$5,122.07

DRAFT POLICY OVERVIEW

In the revised policy, staff attempted to create a more significant tradeoff for the use of City ROW for the installation of private snowmelt systems. A summary of the revised policy is provided below. The more detailed policy draft can be found in Attachment 2.

<u>System Design & Operation Requirements</u>

All snowmelt systems that extend into the ROW must meet the following minimum requirements:

- Pavement Temperature & Moisture Sensors

    - Must accurately measure surface temperature and ambient temperatures, as well as detect snowfall, ice, or precipitation on the surface.
- Automated Controls
    - System activation is only triggered when both temperature and moisture sensors warrant operation.
- Insulation & Drainage
    - Insulate below and perimeter with insulation approved by the City Engineer.
    - Drainage must be retained onsite, designed to eliminate standing water, and drain in a manner that results in no icing on adjacent non-snowmelted surfaces.
- High Efficiency Boiler
    - For systems that elect to use a boiler, the boiler must have an annual fuel utilization efficiency rating of 87% or greater for oil boilers and 90% or greater for gas boilers.

<u>ROW Usage Fee</u>

The property owner must pay a ROW usage fee when a private snowmelt system encroaches into the city ROW. The fee is based on the entire snowmelt system's energy demand. The fee is determined by the snowmelt system size and energy use, calculated using the local utility provider's carbon adder. The fee is a one-time payment that is due in full prior to issuance of the ROW encroachment permit for the snowmelt system. The fees collected will be put into a fund dedicated to energy efficiency and sustainability projects that align and further the City's climate action goals. Staff and KSAC will revisit the carbon adder every two years to ensure the calculation for the fee is using the most current and accurate information available.

Exemptions to the ROW usage fee include existing and proposed alternative energy and partial energy coverage as follows:

- Existing Alternative Energy: The property owner submits documentation demonstrating that a renewable energy system exists onsite (such as solar, geothermal, etc.) that has the capacity to generate sufficient energy across a calendar year of production to power the entirety of the snowmelt system for one winter season.
- Proposed Alternative Energy: The property owner proposes to install a renewable energy system onsite that generates sufficient energy across a calendar year of production to power the entirety of the snowmelt system for one winter season. At time of permit submittal, the property owner would submit documentation demonstrating the renewable energy system's generation capacity for staff to verify its ability to offset the energy demand of the snowmelt system. The renewable energy system must be permitted, installed, and operational either prior to or concurrently with the application submittal for the snowmelt system.
- Partial Energy Coverage: If an existing or proposed renewable energy system does not fully meet the energy demand of the snowmelt system, the property owner is subject to the ROW usage fee for the portion of the energy demand drawn from nonrenewable energy sources.

<u>Snowmelt Systems in the Community Core Zone District</u>

For developments in the Community Core Zone District where the City ROW standards require the installation of snowmelt (such as in bulb outs) for public safety, access, or street maintenance, the snowmelt system is required to comply with the design and operational standards but is exempt from the ROW usage fee. Developments in the Community Core that voluntarily install snowmelt systems are required to comply with the new system design and operation standards and are subject to the ROW usage fee.

Pre-Existing Snowmelt Systems

Please refer to the draft policy in Attachment 2 for what constitutes a repair vs a replacement and the comprehensive requirements for pre-existing snowmelt systems. Repairs to existing systems in the ROW are exempt from the new policy requirements. When an existing snowmelt system in ROW is being fully replaced, the new system would be required to comply with the new policy, which includes system design and operation standards and the ROW usage fee.

Application Process

As is required for all improvements in the ROW, snowmelt systems would be required to obtain a ROW encroachment permit. The encroachment permit applications would be required to submit the snowmelt system specifications, engineering or installation plans illustrating the snowmelt system and its extension in the ROW, calculation of energy usage for the entire system, and payment for the ROW usage fee or demonstrate compliance with one of the exemptions. Staff recommend that these ROW applications be processed administratively, subject to review and approval of the Planning and Building Director, to streamline the permitting process.

Enforcement

If it is observed that an unpermitted snowmelt system is being installed in the ROW, or if an existing snowmelt system is being replaced or expanded without a permit, the City will issue a stop work order and initiate a meeting with the property owner to discuss options for bringing the system into compliance. If the property owner fails to correct the issue, the City reserves the right to have the system removed from the ROW. In cases where a snowmelt system has an approved ROW encroachment agreement but is later found to be noncompliant with the new policy requirements, the City would follow standard enforcement protocols by issuing a violation letter and request a meeting with the property owner to discuss options for bringing the system into compliance. If the property owner fails to bring the system into compliance, the City reserves the right through the terms of the ROW encroachment agreement to revoke the ROW encroachment permit and require the removal of the system from the ROW at the owner's expense. If the owner does not cooperate with the removal of the system, the City can conduct the work to remove the system and bill the property owner per the ROW encroachment agreement. The City also has an option to place a lien on the property for the cost of work.

RECOMMENDATION

Based on the information outlined above, staff believes that to better manage the energy demand and mitigate the carbon impact, the City should allow snowmelt systems in the ROW that are subject to design and operational requirements and a ROW usage fee. Allowing for regulated installations within the ROW will ensure energy efficient design, responsible use, and carbon mitigation while preserving flexibility for property owners.

Staff is requesting that the Council make a motion on one of the following options:

1. Approve the proposed right-of-way snowmelt policy and direct staff to draft the ordinance.
2. Continue the right-of-way snowmelt policy discussion to a date certain with additional information prepared by staff as directed.
3. Continue/table the right-of-way snowmelt policy discussion to a date uncertain and direct staff to bring ROW snowmelt requests to council for decision on a case-by-case basis.

NEXT STEPS

Based on the Council's feedback at the meeting, listed below are the next steps for each motion option:

1. Direct Staff to Draft Ordinance
   - Staff will bring the draft ordinance through the text amendment process for approval from the Planning & Zoning Commission and City Council.
   - Staff will conduct community outreach and education on the policy.

2. Continue Policy Discussion to Date Certain
   - Staff will return to Council on a determined meeting date with additional information that is requested to inform and update the policy design.

3. Continue Policy Discussion to Date Uncertain
   - The policy discussion would be tabled, and staff would bring ROW encroachment agreements on a case-by-case basis to Council for decision.

Sustainability Impact:

In September of 2024, Ketchum formally adopted Blaine County's Climate Action Plan (CAP). Ketchum Resolution #24-017 for the adoption of the CAP can be found linked here. The CAP is a roadmap towards achieving meaningful greenhouse gas mitigation countywide while also adapting to the changes that are already occurring. One of the four focus areas of the CAP is Clean Energy and Green Building. In this chapter, the County identified two main strategies: increasing the supply of renewable energy and reducing the demand of energy overall. The proposed policy addresses both of those strategies. Requiring moisture and temperature monitors as well as requiring insultation of the systems works to ensure that the snowmelt systems that are installed are as energy efficient as possible, reducing overall energy demand. The addition of the right of way usage fee and the dedication of those funds towards installing locally produced renewable energy works towards the first goal of increasing the supply of renewable energy.

Financial Impact:

	The ROW usage fee provision of the policy would generate a fund that is dedicated to municipal energy efficiency and sustainability projects, but the amount is undetermined due to the variability of snowmelt system sizes.

Attachments:

1. May 19, 2025, City Council Staff Report – ROW Snowmelt Policy Discussion
2. Draft ROW Snowmelt Policy
3. Example Snowmelt ROW Usage Fee Calculator
4. Idaho Power's 2025 Integrated Resource Plan – Carbon Adder

City of Ketchum

Attachment 1:

May 19, 2025, City Council Staff Report - ROW Snowmelt Policy Discussion

City of Ketchum

CITY COUNCIL MEETING AGENDA MEMO

Meeting Date:	May 19, 2025	Staff Member/Dept:	Paige Nied, Associate Planner Robyn Mattison, City Engineer Eve Preucil, Blaine County Sustainability Coordinator

Agenda Item:	Recommendation to review and provide policy direction regarding snowmelt installation within the public rights-of-way.

Recommended Motion:

No motion required. Requesting feedback on policy direction.

Reasons for Recommendation:

- On April 3, 2023, the City Council gave a policy directive that they would no longer approve of applications for residential snowmelt systems within the City right-of-way as it impeded the City's sustainability efforts. This excluded areas where a snowmelt system was required by City departments for public safety, access, or street maintenance reasons.
- In Ketchum's 2024 greenhouse gas emissions inventory report, residential energy use accounted for 52% of total emissions, and 59% of all energy related emissions. Together, commercial and residential energy use made up 88% of Ketchum's total emissions. The new inventory shows a 3 mt increase in per capita emissions in the county as a whole since the 2018 inventory. Additionally, Ketchum's residential energy emissions have increased by 2% since the 2018 inventory, indicating that residential energy continues to consume an outsized portion of Ketchum's greenhouse gas emissions.
- On September 16, 2024, Ketchum adopted Blaine County's Climate Action Plan. Chapter six of the Climate Action Plan has two goals, increasing the supply of renewable energy and reducing demand for energy through energy efficiency initiatives and consumption reduction methods. Snowmelt systems are highly consumptive and place a demand on the energy system. By requiring either a renewable energy credit purchase or onsite generation, as well as increasing the efficiency requirement, this policy would directly contribute to achieving both of the Climate Action Plan's Clean Energy and Green Building goals.
- Since the Council's policy directive, staff has encountered challenges with its practical implementation.
- Staff has drafted a revised snowmelt policy that allows for snowmelt systems within the right-of-way that have additional mitigation measures which will better meet the goals of the City's Climate Action Plan and result in a greater impact than prohibiting them outright.

Policy Analysis and Background:

INTRODUCTION

On April 3, 2023, staff presented the City Council with policy options for residential snowmelt systems within the City right-of-way (ROW). The staff report from that meeting is included as Attachment 1 and the recording of the meeting can be viewed here. Following the discussion, the Council gave the policy directive that they would no longer permit residential snowmelt systems within the ROW, unless required for public safety, access, or street maintenance by the Fire and Streets Departments or City Engineer. The rationale for this decision was because snowmelt systems are energy-intensive and they impede the City's ability to reach its sustainability goals. The purpose of this discussion is to update the Council on the challenges that have arisen with the practical implementation of the policy directive and provide a new draft policy option that seeks to better balance the City's climate objectives with community interest in snowmelt systems.

Since the policy directive was given, staff has encountered challenges with implementation. These include unpermitted work being done in the ROW, resulting in stop work orders; community members in disagreement with the policy and requesting approval from Council; and property owners not obtaining approval prior to replacing existing systems. Each of these instances has required significant staff time working with applicants to bring their snowmelt systems into compliance.

Following the last City Council discussion where an applicant was requesting approval for a snowmelt system in the ROW, the Council directed staff to explore other policy options and expand the emissions analysis research for a follow-up policy discussion. Staff has collaborated with the County's sustainability team to identify relevant goals and policies of the adopted Climate Action Plan, further the snowmelt emission analysis, meet with the local contractor community, review other mountain town's standards for snowmelt systems, and develop a draft policy for snowmelt systems in the ROW. Based on this effort, staff believe that the snowmelt policy implemented in 2023 should be revised. Below is an outline of the draft policy and a detailed analysis of the information staff has gathered to inform the draft policy for snowmelt systems.

DRAFT POLICY OVERVIEW

During the work outlined above, staff identified two things: 1) there is a strong desire for snowmelt systems in this community, and 2) allowing snowmelt systems in the ROW with additional mitigation measures in place would better meet the City's sustainability goals and have a greater impact than prohibiting them outright. The draft policy currently proposed by staff allows for residential and commercial snowmelt systems within the ROW, provided they meet specific design and operational standards, and a renewable energy requirement to mitigate the carbon emissions generated from the system. Outlined below is a summary of the proposed policy. The more detailed policy draft can be found in Attachment 2.

<u>System Design & Operation Requirements</u>

To ensure energy efficiency and reduce environmental impact, all snowmelt systems in the ROW must meet the following minimum requirements:

- Pavement Temperature & Moisture Sensors
    - Must accurately measure surface temperature and ambient temperatures, as well as detect snowfall, ice, or precipitation on the surface.
- Automated Controls:
    - System activation is only triggered when both temperature and moisture sensors warrant operation
- Insulation & Drainage
    - Insulate below and perimeter with minimum R-10 structural insulation

- Drainage must be retained within the private property boundary and designed to eliminate standing water

Renewable Energy Requirement

Property owners wishing to voluntarily install snowmelt systems in the ROW must have renewable energy credits or generation for the entire system, through one of the following ways:

1. Renewable Energy Credit Program Enrollment

The property owner must demonstrate enrollment in an approved renewable energy program through the local utility provider that purchases clean energy for 100% of energy use generated by the entire snowmelt system. An example of this would be Idaho Power's "Clean Energy Your Way" program which costs $1 per 100 kilowatt hour (kWh) block. If the property owner has a natural gas system rather than an electric system, they should use the provided kWh equivalent calculator. The property owner must maintain active participation in the renewable energy program for as long as the snowmelt system is operational. The owner would be required to submit proof of enrollment documentation to the City on an annual basis for staff to verify compliance.

2. Onsite Renewable Energy Generation

The property owner must install a source of renewable energy onsite, such as solar, and demonstrate that the renewable energy system generates enough energy to power 100% of the energy used by the snowmelt system. Once the renewable energy system is installed and operational, the property owner would be required to submit documentation that demonstrates sufficient generation capacity.

3. In-Lieu Payment

The fee in lieu option has not been fully developed, but the concept would involve a one-time payment, due in full prior to ROW permit issuance, that is based on the cost equivalent of installing a solar system onsite. Several other communities with exterior energy mitigation requirements use the cost of solar installation to calculate the fee in lieu. The revenue generated through the in lieu fees would go into a fund dedicated to energy efficiency and sustainability projects for the City. Staff is also exploring a hybrid pathway that would allow for a combination of an in lieu fee and installation of renewable energy onsite. However, the in lieu fee structure needs to be further vetted with additional data collection and legal review.

Snowmelt Systems in the Community Core Zone District

For projects in the Community Core Zone District where the City ROW standards require the installation of snowmelt (such as in bulb outs) for public safety, access, or street maintenance, the system is required to comply with the new system design and operational standards, but the City will cover the cost of the renewable energy requirement. For projects in the Community Core voluntarily installing snowmelt systems, where it is not a required ROW standard, are required to comply with the new system design and operation standards as well as the renewable energy requirement.

Municipal Buildings

All new snowmelt systems installed at City-owned buildings or facilities must comply with the new design and operational standards and renewable energy requirement of this policy. By requiring municipal projects to meet the same standards as private applicants, the policy ensures consistency and transparency. It also reinforces the City's priority of advancing its sustainability goals.

Pre-Existing Snowmelt Systems

The policy addresses both pre-existing and new snowmelt systems by distinguishing between a repair and a full replacement. Repairs to existing systems refers to leaks, pump motor replacements, resetting of pavers/tubbing, boiler replacement, and electrical disconnect/failures. Repairs to existing systems in the ROW which does not increase the pre-existing energy consumption would be exempt from the new policy requirements. However, if replacing a boiler, the policy stipulates that it must be replaced with a high efficiency boiler.

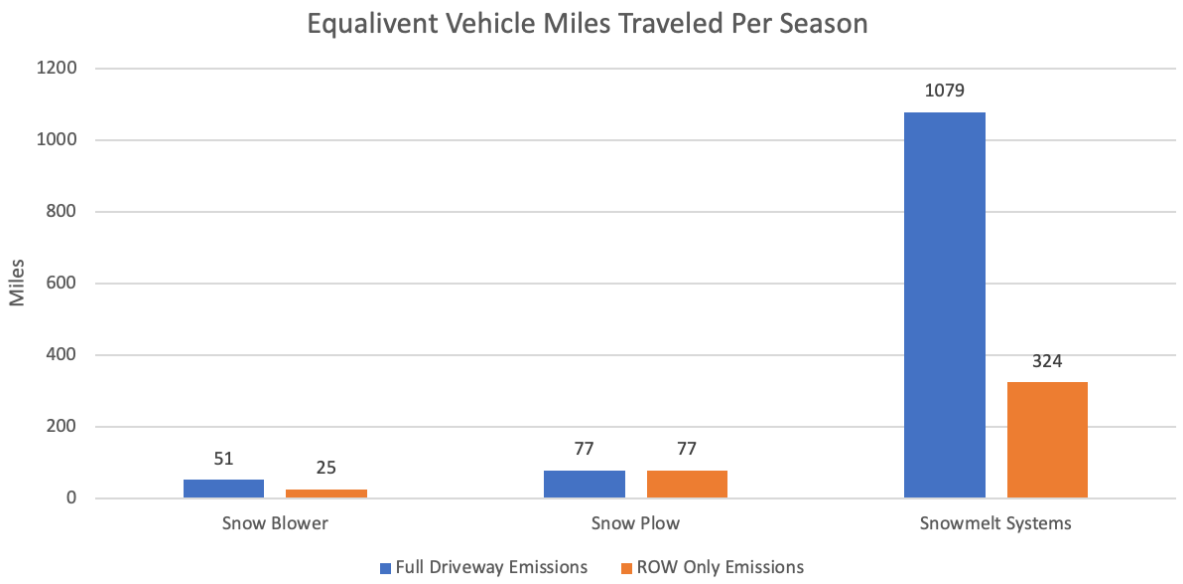
A full system replacement refers to either the complete removal of all elements and installation of a new snowmelt system or a significant modification to an existing system, such as reconfiguring its layout or expanding its coverage area. In either case, the scope of work goes beyond routine maintenance or minor repairs and constitutes a substantial alteration to the original installation. When an existing snowmelt system in the ROW is being replaced, the new system would be required to comply with the new policy, which includes system design and operation standards and a renewable energy requirement.
If it is found that a pre-existing snowmelt system in the ROW does not have an approved ROW encroachment agreement, the owner would be required to obtain one.

Application Process

As is required for all improvements in the ROW, snowmelt systems would be required to obtain a ROW encroachment permit. The encroachment permit applications would be required to submit the snowmelt system specifications, engineering or installation plans illustrating the snowmelt system and its extension in the ROW, calculation of energy usage for the entire driveway, and compliance with the renewable energy requirement. Staff recommend that these ROW applications be processed administratively, subject to review and approval of the Planning and Building Director, to streamline the permitting process.

DATA ANALYSIS

Staff's prior policy analysis focused on estimating carbon dioxide emissions from the three most common snow removal practices; snowmelt systems, snow plowers and haulers, and snowblowers. Staff then converted the pounds of CO_2 to vehicle miles traveled equivalent to help illustrate emissions produced from each snow removal technique. The following figure shows equivalent vehicles miles traveled per season for the three most common snow removal practices.



Given that the preferred method of snow removal in Ketchum involves natural gas-powered hydronic snowmelt systems, staff concentrated efforts on refining carbon dioxide emissions estimates from this type of system. To do so, an energy use per area factor is employed. Industry articles pertaining to design of snowmelt systems indicate that these values can vary from 100-200 BTU/hr*square foot for natural gas hydronic snowmelt systems. Staff used a value of 150 BTU/hr*square foot to estimate the energy efficiency of these systems in Ketchum. Utilizing Ketchum climate data, staff estimated an annual operation time duration and used a carbon dioxide emission coefficient by fuel factor to calculate the annual CO_2 emissions. Staff estimated the annual carbon dioxide emissions from three example driveways of varying sizes: small, medium, and large. The estimates include emissions from the snowmelt systems on private property and the adjacent public right of way. These three driveways represent three actual driveways that were recently approved to install hydronic snowmelt systems on private property that extend into the ROW. Please see Attachment 3 for a full review of staff's snowmelt emissions analysis methodology.

To conceptualize the equivalent emissions, staff input the estimated annual driveway CO_2 emissions into EPA's Greenhouse Gas Equivalencies Calculator online tool. This tool helps translate measurements into concrete terms that are easier to understand. Please refer to Table 1 below for a summary of CO_2 emissions and equivalent emissions.

Table 1 – Ketchum Driveway CO_2 Emission Summary and Equivalent Emissions

	Small Driveway	Medium Driveway	Large Driveway
Full Driveway Size (including ROW) (ft^2)	683	2,114	4,050
Energy Use (BTU/hr)	102,480	317,100	607,500
Energy Use per Year (BTU)	15,679,440	48,516,300	92,947,500
CO_2 emissions per year (lbs)	1829	5659	10,842
This is equivalent to CO_2 emissions from:			
Gallons of gasoline consumed	93.4	289	553
Gallons of diesel consumed	81.5	252	483
Pounds of coal burned	922	2,851	5,463
This is equivalent to carbon sequestered by:			
Tree seedlings grown for 10 years	13.7	42.4	81.4
Acres of U.S. forests in one year	0.83	2.6	4.9

Although these figures may initially seem negligible, the cumulative effect becomes significant when considering the total number of driveways in Ketchum currently equipped with snowmelt systems, in addition to the number of new applications the City receives annually. Each individual installation contributes meaningfully to a broader collective impact.

Methodology for Purchase Renewable Energy Calculation

Staff explored what purchasing renewable energy through a utility's renewable energy credit program would look like for various driveway sizes. Staff used Idaho Power's "Clean Energy Your Way" program for this calculation, as they are the main utility in the area. The program gives customers the option to choose to exclusively utilize renewable energy rather than Idaho Power's average energy mix for their home

electricity usage. Idaho Power's program gives users two options for using renewable energy for their energy consumption: customers can either purchase a selected number of 100 kWh blocks or they can choose to purchase renewable energy for their entire energy bill. For this policy's purposes, staff selected to use the block option so that calculations were exclusively based off energy used for the snowmelt system. For this program, Idaho Power charges $1 per 100kWh purchased. Note that this adds an additional dollar to your existing bill, rather than replace it. The table below provides three case studies estimating what the cost of purchasing renewable energy for a snowmelt system could look like.

Table 2 -- Renewable Energy Purchase Program Cost for Driveway Sizes

	Small Driveway	Medium Driveway	Large Driveway
Driveway Size (ft^2)	683	2,114	4,050
Energy Use (BTU/hr)	102,480	317,100	607,500
Energy Use per Year (BTU)	15,679,440	48,516,300	92,947,500
KWh Equivalent	4,595	14,219	27,241
Cost of Renewable Energy Purchase per Year ($)	45.95	142.19	272.41
Cost of Renewable Energy Purchase Over 30-Year System Lifetime ($)	1378.61	4,265.79	8,172.41

CONTRACTOR MEETING

In early spring, staff presented the preliminary draft policy to members of the local contractor community that specialize in snowmelt systems for feedback. From this meeting, staff gained a better understanding of the types of systems that are installed locally. Contractors noted that it is the standard for installations to include temperature and moisture sensors, and they provided clarification on what distinguishes a repair from a full system replacement as well as the typical lifespan of these systems. Overall, the feedback was generally supportive of the policy, and they echoed staff's sentiment that snowmelt is highly desired in the community. The contractors stated that the lifespan of these systems is generally 30 years. One piece of feedback received was that replacing a boiler is considered a repair and does not classify as a full system replacement. However, it was recommended that staff include a requirement for the installation of a high efficiency boiler when a replacement occurs. One component of the policy that contractors had concerns with was the insulation requirement, particularly related to challenges with implementation.

The draft policy includes a requirement to install a minimum of R-10 structural insulation below and around the perimeter of the snowmelt system. However, the contractors expressed that incorporating insulation can be challenging as it may lead to uneven melting and surface settlement, which creates impervious surface. Staff recommend adhering to the insulation requirements outlined in the policy. In Ketchum, frost depth penetrates several feet into the subsoil. Insulation directs heat upwards, preventing unnecessary heating of the subsurface which increases the carbon emissions of the system. Insulation enhances the system's efficiency by approximately 15-20%.

RECOMMENDATION

Based on the information outlined above, staff believes that to best achieve the Ketchum's sustainability goals, the City should allow snowmelt systems in the ROW that are subject to design and operational requirements and a renewable energy requirement to mitigate emissions. Allowing for regulated installations within the ROW will ensure energy efficient design, responsible use, and carbon mitigation while preserving flexibility for property owners.

Staff is requesting feedback on the policy and answers to the following questions:

- Do you generally support the policy, or do you have any proposed changes?
- Do you support retaining the insulation requirement?

NEXT STEPS

Based on the Council's feedback at the meeting, listed below are the next steps:

- Resolution regarding outstanding enforcement cases
- In lieu fee follow up
- Codify the policy
- Outreach and education

Sustainability Impact:

In September of 2024, Ketchum formally adopted Blaine County's Climate Action Plan (CAP). Ketchum Resolution #24-017 for the adoption of the CAP can be found linked here. The CAP is a roadmap towards achieving meaningful greenhouse gas mitigation countywide while also adapting to the changes that are already occurring. One of the four focus areas of the CAP is Clean Energy and Green Building. In this chapter, the County identified two main strategies: increasing the supply of renewable energy and reducing the demand of energy overall. The proposed policy addresses both of those strategies. Requiring moisture and temperature monitors as well as requiring insultation of the systems works to ensure that the snowmelt systems that are installed are as energy efficient as possible, reducing overall energy demand. The options of onsite solar or the purchase of renewable energy credits (REC) work towards achieving the goal of increasing the supply of renewable energy, either directly through onsite generation or indirectly through market influence with the local utility. The third option of paying a fee in lieu of generation or renewable energy purchases further contributes to accomplishing the CAP's goals by contributing to a dedicated sustainability fund that will be used for implementing a range of initiatives that align with the CAP.

Financial Impact:

None	There is no financial requirement from the City at this time.

Attachments:

1. April 3, 2023, City Council Staff Report – ROW Residential Snowmelt Policy Discussion
2. Draft ROW Snowmelt Policy
3. Snowmelt Carbon Emissions Analysis

City of Ketchum

Attachment 2:

Draft ROW Snowmelt Policy

Snowmelt Systems Within the City Right-of-Way Draft Policy

Purpose

The purpose of this policy is to establish standards under which property owners may install a snowmelt system that encroaches into the city-owned right-of-way. These standards are intended to balance energy burden and carbon emission mitigation while complying with regulatory standards.

Applicability

The standards of this section apply to property owners who voluntarily install, repair, replace, or extend snowmelt systems into the City owned right-of-way.

New Snowmelt Systems in the Right-of-Way

- System Design & Operation Requirements
    - Pavement Temperature & Moisture Sensors
        - The system shall accurately measure surface and ambient temperatures and must accurately detect snowfall, ice, or precipitation on the surface.
    - Automated Controls
        - System activation is only triggered when both temperature and moisture conditions warrant operation.
    - Insulation and Drainage
        - Insulate below and perimeter with insulation approved by the City Engineer
        - Drainage must be retained onsite, designed to eliminate standing water, and drain in a manner that results in no icing on adjacent non-snowmelted surfaces.
    - High Efficiency Boiler
        - For systems that elect to use a boiler, the boiler must have an annual fuel utilization efficiency rating of 87% or greater for oil boilers and 90% or greater for gas boilers.
- Right-of-Way Usage Fee
    - Fee Requirement
        - The property owner must pay a one-time right-of-way usage fee when a private snowmelt system encroaches into the City right-of-way. The fee is based on the entire snowmelt system's energy usage to address excess energy demand on public property.
            - The right-of-way usage fee is determined by the snowmelt system size and energy use and calculated using the local utility provider's zero-carbon price adder forecast.

        - Staff and the Ketchum Sustainability Advisory Committee will revisit the fee calculation every two years to ensure the methodology uses the most current and accurate information available.
    - Fee Exemptions
        - Existing Alternative Energy: The property owner submits documentation demonstrating that a renewable energy system exists onsite that has the capacity to generate sufficient energy across a calendar year of production to power the entirety of the snowmelt system for one winter season.
        - Proposed Alternative Energy: The property owner proposes to install a renewable energy system that generates sufficient energy across a calendar year of production to power the entirety of the snowmelt system for one winter season. At time of permit submittal, the property owner would submit documentation demonstrating the renewable energy system's generation capacity for staff to verify its ability to offset the energy demand of the snowmelt system. The renewable energy system must be permitted, installed, and operational prior to or concurrently with application submittal for the snowmelt system.
        - Partial Energy Coverage: If an existing or proposed renewable energy system does not fully meet the energy demand of the snowmelt system, the property owner must calculate the residual energy required and pay the right-of-way usage fee for the remaining amount of energy drawn from nonrenewable energy sources.

<u>Snowmelt Systems in the Community Core Zone District</u>

- For projects in the Community Core Zone District where the City right-of-way standards require the installation of a snowmelt for public safety, access, or street maintenance, the system shall comply with the new system design and operational standards, but the project shall be exempt from the right-of-way usage fee.
- For projects in the Community Core Zone District voluntarily installing snowmelt systems in the right-of-way, and its installation is not a City right-of-way standards requirement, the system shall comply with the design and operation standards and is subject to the right-of-way usage fee.

<u>Pre-Existing Snowmelt Systems in the Right-of-Way</u>

- Repair
    - Repairs to existing systems include but are not limited to leaks, pump motor replacements, resetting of pavers/tubbing, boiler replacement, and electrical disconnect/failures
    - Repairs to existing snowmelt systems in the right-of-way which do not increase the pre-existing energy consumption are exempt from the requirements of this section.
        - For boiler replacements, the replacement must be a high efficiency boiler

- Replacement
    - Replacements include but are not limited to replacing/reconfiguring/expanding existing snowmelt system
    - For the replacement of pre-existing snowmelt systems in the right-of-way, the new system must comply with the design and operational standards and renewable energy requirement of this section.
- Right of Way Encroachment Permit
    - A right-of-way encroachment permit is required for all improvements within the City right-of-way. If it is found that a pre-existing snowmelt system in the right-of-way does not have an approved encroachment agreement, the owner is required to obtain one.

Application Process

- The owner must submit a right-of-way encroachment permit application subject to administrative approval with the following:
    - Snowmelt system specifications
    - Engineering or installation plans illustrating the snowmelt system and its extension in the right-of-way
    - Calculation of energy demand for entire snowmelt system
    - Payment of right-of-way usage fee, proof of onsite renewable energy generation for 100% of energy generated by snowmelt system, or partial onsite energy generation and payment of remainder of right-of-way usage fee.

Enforcement

- Failure to comply with any provision of this section may result in permit revocation.
- The City reserves the right to require the removal of a snowmelt system from the City right-of-way at the owner's expense if it is found to be noncompliant with this section.

Authority of the Administrator

- The administrator is authorized to approve right-of-way encroachment permit applications for snowmelt systems that encroach into the right-of-way.

City of Ketchum

Attachment 3:

Example ROW Usage Fee Calculator

Parcel Information				
Project Adress:				
	Parcel ID #:			
	Permit Number:			
Contact Information:				
	Name:		City:	
	Address:		State:	
	Email:		Zip Code:	
	Phone:		Cell Phone:	

SAMPLE Right Of Way Calculator	
Onsite Renewable Energy Generation *Please enter the following details pertaining to any existing onsite renewable energy generation including small head hydro, solar PV, wind, geothermal, or otherwise*	
Type of energy generation:	NA
Size of system (kW):	0
Yearly generation capacity (kWh):	0
Snowmelt System Size and Specs *Please enter the following information pertaining to driveway and*	
Total Driveway Area For Snowmelt System (SF)	683
Efficiency of Installed System (BTU/hr*sf)	150
Energy Use for Operation (BTU/hr)	102450
ROW Usage Fee Calculation	
Energy Use per year (BTU)	15674850
Energy use per year in million BTUs	15.67485
kWhs of Onsite Renewable Energy Generation	0
BTUs of renewable energy produced on site	0
Million BTUs of renewable energy produced on site	0
Remaining Energy Use to be Paid by Fee	15.67485
Remaining CO2 emissions per year (lbs)	1828.471253
Remaining CO2 emissions per year (tons)	0.914235626
Cost of Carbon per year ($)	130.7356946
ROW Usage Fee	3922.070837
Administrative Fee	1200
Total Fee	5122.070837

Instructions:
Enter information into orange cells only
Blue cells are calculated cells

City of Ketchum

Attachment 4:

Idaho Power's 2025 Integrated Resource Plan – Carbon Adder

Small Modular Nuclear Reactors

Background—Small modular nuclear reactors (SMRs) were not selected in the Preferred Portfolio. This validation run forces in a bank of SMRs to determine if the model could be optimized and produce better results with the SMR inclusion and was performed at the request of an IRPAC member.

Test—Force in 500 MWs of SMR units at the earliest point at which they could be constructed, in the year 2035, and allow the model to optimize around the selection.

Result—Forcing 500MWs of SMR units into the LTCE selection increases costs, as expected.

Pumped Hydro

Background—Pumped hydro was not selected in the Preferred Portfolio. This validation run forces in a pumped hydro project to determine if the model could be optimized and produce better results.

Test—Force in a pumped hydro unit at the earliest point at which it is considered feasible, in the year 2030, and allow the model to optimize around the selection.

Result—Forcing pumped hydro into the LTCE resource selection increases costs, as expected.

Natural Gas Price Variation Portfolios

Idaho Power tested portfolios under an additional high natural gas price forecast, EIA's Low Oil & Gas Supply forecast and low natural gas price forecast, EIA's High Oil & Gas Supply forecast. For more details and discussion on the natural gas price forecasts, see Chapter 8.

Carbon Price Variation Portfolios

Idaho Power developed portfolios primarily using a zero-carbon price adder forecast. In prior, recent IRPs, this assumption has been non-zero on the basis that it was a proxy for possible future GHG regulation. With the passage of the EPA 111(d) rules, those regulations have materialized and have thus replaced the carbon price adder in the base assumptions. This IRP has continued the practice of modeling carbon adders as an element of the stochastic analysis to capture the risk in these assumptions with details discussed in the Stochastic Risk sections. Additionally, a High Carbon Cost forecast was used for the High Gas & Carbon Prices scenario (see Chapter 10). The carbon price scenarios for the 2025 IRP are shown in Figure 9.4:

1. Planning Case Carbon Cost forecast - zero carbon price adder forecast.
2. High Carbon Cost forecast— based on the California Energy Commission's 2020 Integrated Energy Policy Report Preliminary Green House Gas Allowance Price Projections, Low-price Scenario. The carbon cost forecast assumes a price of roughly

$79 per ton beginning in 2029 and increases to over $143 per ton by the end of the IRP planning horizon.

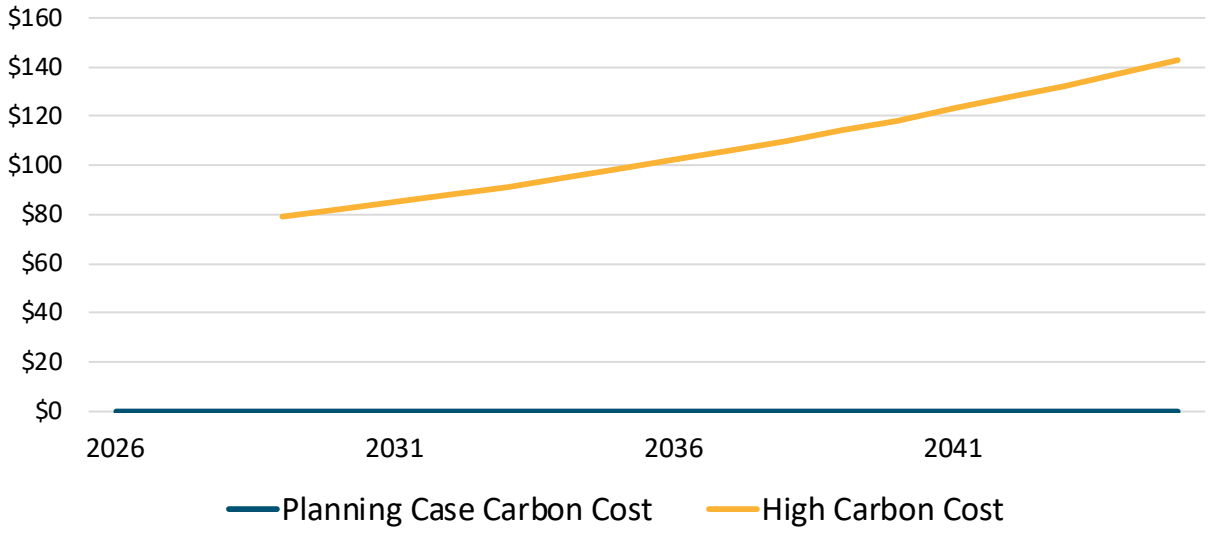


Figure 9.4. Carbon price forecast ($/ton CO_2)