

1 ORDINANCE 22, 2023

2
3 **AN ORDINANCE AMENDING CHAPTER 1 OF TITLE 8 OF THE**
4 **BRECKENRIDGE TOWN CODE TO CREATE A PROGRAM TO REDUCE**
5 **OUTDOOR ENERGY USE AND IN CONNECTION THEREWITH ESTABLISH**
6 **FEES FOR THE ADMINISTRATION OF THE PROGRAM.**

7 WHEREAS, the Town of Breckenridge is committed to reducing energy and greenhouse
8 gas emissions associated with stationary energy use 36% by 2050; and

9 WHEREAS, after robust public process, the SustainableBreck Plan was adopted in 2022
10 and outlines policy strategies to achieve energy and greenhouse gas emissions savings; and

11 WHEREAS, the purpose of this code is to specifically address outdoor energy use; and

12 WHEREAS, the above code program to certain International Code Council Building
13 Codes were drafted in response to local conditions; and

14 WHEREAS, meetings with local, technical experts – including members of the
15 architectural, mechanical engineering, and construction community have been held and input
16 solicited; and

17 WHEREAS, work sessions have been held with Town Council on July 13, 2021;
18 November 23, 2021; January 25, 2022; January 10, 2023; March 28, 2023; and May 9, 2023;

19 WHEREAS, staff presented Council with the policy proposal pursued by this above code
20 program and received feedback and direction from Council; and

21 WHEREAS, public educational meetings to introduce the new codes have been held and
22 opportunities for interested party input regarding adoption of the news codes has been made
23 available; and

24 WHEREAS, an analysis done by Resource Engineering Group (REG) retained by the
25 High Country Conservation Center (HC3), the project lead for the Summit Climate Action
26 Collaborative, demonstrates a reasonable relationship between fossil fuel energy intensity of
27 outdoor systems and the mitigation requirements to off-set that use based on local market and
28 weather conditions; and

29 WHEREAS, the fee established herein is designed to offset the energy intensity of
30 unmitigated projects through investment in other community energy efficiency projects; and

1 WHEREAS, the Chief Building Official, also referred to herein as the “building official” is
2 authorized by the Town Council to administer and enforce this code; and

3 WHEREAS, the Town Council has determined that it is in the best interest of the
4 residents of Breckenridge to continue to have code compliance reviews performed by the Town;
5 and

6 WHEREAS, as the culmination of input from Town Council, staff expertise, consultant
7 expertise, and the feedback from local design, building, and engineering professionals; the
8 proposed code adoption will result in more efficient and higher performance of energy
9 associated with building use, including outdoor energy; and

10 WHEREAS, contemporaneously with this ordinance, is a companion ordinance to adopt
11 a new Absolute Policy 33 limiting fireplaces and amending Relative Policy 33 to disincentivize
12 outdoor energy use; and

13 WHEREAS, it is in the best interest of the citizens of and visitors to our community for
14 Breckenridge to continue to maintain a leadership role in energy code adoption and
15 administration.

16 NOW THEREFORE, BE IT ORDAINED BY THE BRECKENRIDGE TOWN COUNCIL
17 OF THE TOWN OF BRECKENRIDGE COLORADO THAT:

18 **Section 1.** That a new paragraph 79 of section 8-1-5 A of “Amendments to the
19 International Residential Code” 2018 be added by adopting the language underlined to read as
20 follows:

21 79. Section N1101.4 Above code program is amended by adding new subsections to read
22 as follows:

23 N1101.4.2 Renewable Energy Mitigation Program (REMP). All exterior energy use as
24 defined in N1113.1 shall be designed and comply with the mandatory requirements of the
25 Breckenridge Renewable Energy Mitigation Program.

26 **Section 2.** That a new paragraph 80 of section 8-1-5 A of “Amendments to the
27 International Residential Code” 2018 be added by adopting the language underlined to read as
28 follows:

29 80. N1112.1 Title. Renewable Energy Mitigation Program (REMP)

1 N1112.2 Scope. This section establishes criteria for compliance with the Breckenridge
2 Renewable Energy Mitigation Program (REMP). The scope of this program includes exterior
3 energy uses and energy production to offset exterior energy use.

4 N1112.3 Mandatory Requirements. Compliance with this section requires that the
5 provisions of this section be followed for all exterior energy use as defined in N1113.1.
6 Compliance with this section will be documented via the free Public Domain tool “Breckenridge
7 REMP Calculation Sheet” in the most current version at the time of permit application. Projected
8 energy use, associated energy offset required, fees and credits are defined within this tool.

9
10 Credits for on-site renewable energy. The Renewable Energy Mitigation Payment (REMP)
11 option is voluntary. Applicants interested in exterior energy use systems can alternatively
12 choose to produce on-site renewable energy with renewable energy systems such as solar
13 photovoltaics and/or solar hot water, wind, or micro-hydro. The energy efficient technology of
14 ground source heat pumps is also permitted for supplemental on-site energy.

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16 N1113.1 Exterior energy uses. Residential exterior energy uses (per list below) may be
17 installed only if the supplemental energy meets the requirements of the Renewable Energy
18 Mitigation Program. This applies to all installation for which an application for a permit is filed or
19 is by law required to be filed. This does not apply to work on existing systems that were
20 permitted prior to this code.

21 1. Snowmelt (i.e. driveways, patios, walkways, etc.)

22 2. Exterior pools

23 3. Exterior hot tubs and spas

24 4. Permanent natural gas or electric systems or appliances for heating or cooking
25 outdoor residential spaces.

26
27 N1113.2 On-site renewable credits. Credits for renewable energy production will be calculated
28 and applied per “Breckenridge REMF Calculation Sheet” for energy generated on-site.
29 Renewable energy methods listed in the calculator include: solar photovoltaic, solar thermal,
30 ground source heat pumps, hydroelectric and wind power. Provision for alternative method
31 calculations is also provided, but it will require specific review and approval by the Building
32 Official.

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34 N1113.3 Snowmelt systems.

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- 1. R-10 insulation shall be installed under all areas to be snowmelted.
- 2. Required snowmelt controls. All systems are required to have automated controls to limit operation to when moisture is present, outdoor air temperature is below 40F and above 20F, and the slab temperature sensing. Idling of residential slabs is not permitted.
- 3. Snowmelt heating appliances will have a minimum efficiency of 92% AFUE. Electric resistance and heat pump heaters will be allowed. Where condensing boilers are used, the boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler operation.
- 4. Up to 100 square feet of snowmelt continuous to a residential building is exempt for safety.

N1113.4 Exterior pools.

- 1. Pool covers are required for all pools, with a minimum R-value of 2.
- 2. Pool heating appliances will have a minimum efficiency of 92% AFUE. Electric resistance and heat pump heaters will be allowed. Where condensing boilers are used, the boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler operation.

N1113.5 Exterior hot tubs and spas.

- 1. Hot tub and spa covers are required for all spas, with a minimum R-value of 12.
- 2. Packaged hot tubs and spas less than 64 square feet are exempt.
- 3. A maximum of (1) hot tub or spa per residential property is exempt. For residential HOAs with individual ownership, 64 square feet of hot tub or spa space is exempt for every 10 residential units.
- 4. Hot tub and spa heating appliances will have a minimum efficiency of 92% AFUE. Electric resistance and heat pump heaters will be allowed. Where condensing boilers are used, the boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler operation.

N1113.6 Other permanent natural gas or electric heating or cooking elements.

- 1. A combined 200,000 BTU budget is allowed for permanent natural gas or electric heating or cooking elements at a reduced renewable offset requirement.

1 N1113.7 Gas fireplace, firepit, firetable controls. Residential outdoor natural gas
2 fireplaces, firepits, or firetables shall include timers required to limit the run time of the system.
3 Controls and switching shall be configured so as not to allow continuous operation.

4 N1113.8 Electric heat tape controls. Electric roof and gutter deicing systems shall
5 include either automatic controls capable of shutting off the system when outdoor temperature is
6 above 40F and below 25F, and which limit the use of the system to daylight hours by means of
7 a programmable timer or automated clock, or moisture detection sensors.

8 N1114.1. A permit shall not be valid until all fees as in effect at the time of permit
9 submittal are paid in full, or the renewable energy system is proposed for on-site credit. Nor
10 shall a change order to the permit be released until the additional fees, if any, have been paid.
11 REMP compliance will be verified at Certificate of Occupancy or Certificate of Completion
12 according to the proposed plans. C.O. can be withheld if the project is non-compliant.

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14 N1115.1 Pre-existing systems. Pre-existing systems, for which a permit was applied for
15 and granted prior to the effective date of this code, are exempt from this program. Additions or
16 expansions of existing systems that require a permit will require compliance with this above
17 code program.

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19 Pre-existing systems for which a prior REMF payment was paid and which seek to be
20 replaced shall receive a pro-rated credit calculated by the number of years since prior REMF
21 payment divided by 20 years. For example, a REMF payment made for a system permitted 10
22 years prior to the current replacement being sought will receive credit for ½ of the prior REMF
23 payment and that amount shall be deducted from the REMF payment owed on the replacement.
24 For renewable systems installed on site, full credit will be given for up to 20 years after the date
25 of installation. Credits will only be applied to properly permitted and functioning systems within
26 the scope of the adopted Energy Code and applicable Mechanical and Electrical Codes.
27 Systems installed prior to 20 years before the date of permit application are not eligible for pro-
28 ration of system credits.

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30 Upgrades to existing mechanical equipment (boilers, heat pumps, HVAC equipment,
31 etc.) or renewable energy systems will not require submittal to the REMF program.

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1 N1116.1 Solar photovoltaic systems. System designer and installer must be certified by
2 Colorado Solar Energy Industries Association (COSEIA) or North American Board of Certified
3 Energy Practitioners (NABCEP), or a licensed Professional Engineer in the State of Colorado.

4 N1116.2 Solar thermal. The size of solar hot water systems is limited to 500 ft2 of
5 collector area absent approval by the Building Official. Systems larger than this limit will be
6 considered, but will require documentation showing year-round utilization of the system.

7 N1116.3 Ground source heat pumps. In order to use ground source heat pumps for on-
8 site renewable credit, the GSHP system must supply at least 20% of the peak load for heating
9 the exterior energy uses. Each GSHP shall be tested and balanced and the design engineer
10 shall certify in writing that it meets or exceeds a design coefficient of performance of 3.0
11 inclusion of source pump power. Design conditions for determining COP will be 30F ground loop
12 temperature measured at the GSHP inlet, and 110F GSHP load side outlet.

13 **Section 2.** That reserved paragraph 3 of section 8-1-9A of “Amendments to the
14 International Energy Conservation Code” 2018 Edition be amended by adding the language
15 underlined to read as follows:

16 Paragraph 3. C102.1.1 Above code program is amended by adding new subsections to read
17 as follows:

18 C102.1.2 Renewable Energy Mitigation Program (REMP). All exterior energy use as
19 defined in C410 shall be designed and comply with the mandatory requirements of the
20 Breckenridge Renewable Energy Mitigation Program.

21 **Section 3.** That section 8-1-9A of “Amendments to the International Energy
22 Conservation Code” 2018 Edition be amended by adding a new paragraph 14 and renumber the
23 subsequent paragraphs accordingly:

24 Paragraph 14. C409 Title. Renewable Energy Mitigation Program (REMP)

25 C409.1 Scope. This section establishes criteria for compliance with the Breckenridge
26 Renewable Energy Mitigation Program (REMP). The scope of this program includes exterior
27 energy uses and energy production to offset exterior energy use.

28 C409.2 Mandatory Requirements. Mandatory Requirements. Compliance with this
29 section requires that the provisions of this section be followed for all exterior energy use.
30 Compliance with this section will be documented via the free Public Domain tool “Breckenridge
31 REMP Calculation Sheet” in the most current version at the time of permit application. Projected
32 energy use, associated energy offset required, fees and credits are defined within this tool.

33

1 Credits for on-site renewable energy. The Renewable Energy Mitigation Payment (REMP)
2 option is voluntary. Applicants interested in exterior energy use systems can alternatively
3 choose to produce on-site renewable energy with renewable energy systems such as solar
4 photovoltaics and/or solar hot water, wind, or micro-hydro. The energy efficient technology of
5 ground source heat pumps is also permitted for supplemental on-site energy.

6 C410 Exterior energy uses. Commercial exterior energy uses (per list below) may be
7 installed only if the supplemental energy meets the requirements of the Renewable Energy
8 Mitigation Program. This applies to all installation for which an application for a permit is filed or
9 is by law required to be filed with or without an associated Building Permit. This does not apply
10 to work on existing systems that were permitted prior to this code.

11
12 1. Snowmelt (i.e. driveways, patios, walkways, etc.)

13 2. Exterior pools

14 3. Exterior hot tubs and spas

15 4. Permanent natural gas or electric systems for heating outdoor commercial
16 spaces.

17
18 C410.1 On-site renewable credits. Credits for renewable energy production will be
19 calculated and applied per "Breckenridge REMP Calculation Sheet" for energy generated on-
20 site. Renewable energy methods listed in the calculator include: solar photovoltaic, solar
21 thermal, ground source heat pumps, hydroelectric and wind power. Provision for alternative
22 method calculations is also provided, but it will require specific review and approval by the
23 Building Official.

24 C410.2 Snowmelt systems.

25 1. R-10 insulation shall be installed under all areas to be snowmelted.

26 2. Required snowmelt controls. All systems are required to have automated controls to limit
27 operation to when moisture is present, outdoor air temperature is below 40F and above 20F,
28 and the slab temperature sensing. Idling of commercial slabs is allowed where public safety is a
29 factor.

30 3. Snowmelt heating appliances will have a minimum efficiency of 92% AFUE. Electric
31 resistance and heat pump heaters will be allowed. Where condensing boilers are used, the
32 boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler
33 operation.

1 4. Up to 100 square feet of snowmelt per emergency egress pathway is exempt.

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3 C410.3 Exterior pools.

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5 1. Pool covers are required for all pools, with a minimum R-value of 2.

6 2. Pool heating appliances will have a minimum efficiency of 92% AFUE. Electric resistance and
7 heat pump heaters will be allowed. Where condensing boilers are used, the boiler supply water
8 temperature shall be a maximum of 130F to allow for efficient boiler operation.

9
10 C410.4 Exterior hot tubs and spas.

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12 1. Hot tub and spa covers are required for all hot tubs and spas, with a minimum R-value of 12.

13 2. Hot tub and spa heating appliances will have a minimum efficiency of 92% AFUE. Electric
14 resistance and heat pump heaters will be allowed. Where condensing boilers are used, the
15 boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler
16 operation.

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18 C410.5 Other permanent natural gas or electric heating and cooking elements.

19
20 1. A combined 350,000 BTU budget is allowed for permanent natural gas or electric heating
21 and cooking elements at a reduced renewable offset requirement.

22
23 C410.6 Gas fireplace, firepit, firetable controls. Commercial outdoor natural gas
24 fireplaces, firepits, and firetables shall include timers required to limit the run time of the
25 system. Controls and switching shall be configured so as not to allow continuous operation.

26 C410.7 Electric heat tape controls. Electric roof and gutter deicing systems shall include
27 either automatic controls capable of shutting off the system when outdoor temperature is above
28 40F and below 25F, and which limit the use of the system to daylight hours by means of a
29 programmable timer or automated clock, or moisture detection sensors.

30 C411 A permit shall not be valid until all fees as in effect at the time of permit submittal
31 are paid in full, or the renewable energy system is proposed for on-site credit. Nor shall a
32 change order to the permit be released until the additional fees, if any, have been paid. REMP
33 compliance will be verified at Certificate of Occupancy or Certificate of Completion according to
34 the proposed plans. C.O. can be withheld if the project is non-compliant.

1 C412 Pre-existing systems. Pre-existing systems, for which a prior permit was applied
2 for and granted prior to the effective date of this code, are exempt from this program. Additions
3 or expansions of existing systems that require a permit will require compliance with this above
4 code program.

5
6 Pre-existing systems for which a prior REMP payment was paid and which seek to be
7 replaced shall receive a pro-rated credit calculated by the number of years since prior REMP
8 payment divided by 20 years. For example, a REMP payment made for a system permitted 10
9 years prior to the current replacement being sought will receive credit for ½ of the prior REMP
10 payment and that amount shall be deducted from the REMP payment owed on the replacement.
11 For renewable systems installed on site, full credit will be given for up to 20 years after the date
12 of installation. Credits will only be applied to properly permitted and functioning systems within
13 the scope of the adopted Energy Code and applicable Mechanical and Electrical Codes.
14 Systems installed prior to 20 years before the date of permit application are not eligible for pro-
15 ration of system credits.

16 Upgrades to existing mechanical equipment (boilers, heat pumps, HVAC equipment,
17 etc.) or renewable energy systems will not require submittal to the REMP program.

18
19 C413 Solar photovoltaic systems. System designer and installer must be certified by
20 Colorado Solar Energy Industries Association (COSEIA) or North American Board of Certified
21 Energy Practitioners (NABCEP), or a licensed Professional Engineer in the State of Colorado.

22 C413.1 Solar thermal. The size of solar hot water systems is limited to 500 square feet
23 of collector area absent approval by the Building Official. Systems larger than this limit will be
24 considered, but will require documentation showing year-round utilization of the system.

25 C413.2 Ground source heat pumps. In order to use ground source heat pumps for on-
26 site renewable credit, the GSHP system must supply at least 20% of the peak load for heating
27 all the exterior energy uses. Each GSHP shall be tested and balanced and the design engineer
28 shall certify in writing that it meets or exceeds a design coefficient of performance of 3.0
29 inclusion of source pump power. Design conditions for determining COP will be 30F ground loop
30 temperature measured at the GSHP inlet, and 110F GSHP load side outlet.

31 **Section 4.** That existing paragraph 16 to section 8-1-9A of “Amendments to the
32 International Energy Conservation Code” 2018 Edition be replaced with the below language to
33 read as follows and that paragraph 16 along with the subsequent paragraphs be renumbered
34 accordingly:

1 16. R102.1.1 Above code program is amended by adding new subsections to read as
2 follows:

3 R102.1.2 Renewable Energy Mitigation Program (REMP). All exterior energy use as
4 defined in R408 shall be designed and comply with the mandatory requirements of the
5 Breckenridge Renewable Energy Mitigation Program.

6 **Section 5.** That existing paragraph 19 of section 8-1-9A of “Amendments to the
7 International Energy Conservation Code” 2018 Edition be replaced with the below underlined
8 language and that paragraph 19 and the subsequent paragraphs be renumbered accordingly:

9 19. R407 Title. Renewable Energy Mitigation Program (REMP)

10 R407.1 Scope. This section establishes criteria for compliance with the Breckenridge
11 Renewable Energy Mitigation Program (REMP). The scope of this program includes exterior
12 energy uses and energy production to offset exterior energy use.

13 R407.2 Mandatory Requirements. Compliance with this section requires that the
14 provisions of this section be followed for all exterior energy use. Compliance with this section
15 will be documented via the free Public Domain tool “Breckenridge REMF Calculation Sheet” in
16 the most current version at the time of permit application. Projected energy use, associated
17 energy offset required, fees and credits are defined within this tool.

18
19 Credits for on-site renewable energy. The Renewable Energy Payment (REP) option is
20 voluntary. Applicants interested in exterior energy use systems can alternatively choose to
21 produce on-site renewable energy (Section R412) with renewable energy sources such as solar
22 photovoltaics and/or solar hot water, wind, or micro-hydro. The energy efficient technology of
23 ground source heat pumps is also permitted for supplemental on-site energy.

24
25 R408 Exterior energy uses. Residential exterior energy uses (per list below) may be
26 installed only if the supplemental energy meets the requirements of the Renewable Energy
27 Mitigation Program. This applies to all installation for which an application for a permit is filed or
28 is by law required to be filed with or without an associated Building Permit. This does not apply
29 to work on existing systems that were permitted prior to this code.

30
31 1. Snowmelt (i.e. driveways, patios, walkways, etc.)

32 2. Exterior pools

33 3. Exterior hot tubs and spas

1 4. Permanent natural gas or electric systems for heating outdoor residential
2 spaces.

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4 R408.1 On-site renewable credits. Credits for renewable energy production will be
5 calculated and applied per "Breckenridge REMP Calculation Sheet" for energy generated on-
6 site. Renewable energy methods listed in the calculator include: solar photovoltaic, solar
7 thermal, ground source heat pumps, hydroelectric and wind power. Provision for alternative
8 method calculations is also provided, but it will require specific review and approval by the
9 Building Official.

10
11 R408.2 Snowmelt systems.

12
13 1. R-10 insulation shall be installed under all areas to be snowmelted.

14
15 2. Required snowmelt controls. All systems are required to have automated controls to limit
16 operation to when moisture is present, outdoor air temperature is below 40F and above 20F,
17 and the slab temperature sensing. Idling of residential slabs is not permitted.

18
19 3. Snowmelt heating appliances will have a minimum efficiency of 92% AFUE. Electric
20 resistance and heat pump heaters will be allowed. Where condensing boilers are used, the
21 boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler
22 operation.

23
24 4. Up to 100 square feet of snowmelt continuous to a residential building is exempt for safety.

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26 R408.3 Exterior pools.

27
28 1. Pool covers are required for all pools, with a minimum R-value of 2.

29
30 2. Pool heating appliances will have a minimum efficiency of 92% AFUE. Electric resistance and
31 heat pump heaters will be allowed. Where condensing boilers are used, the boiler supply water
32 temperature shall be a maximum of 130F to allow for efficient boiler operation.

33
34 R408.4 Exterior hot tubs and spas.

- 1
2 1. Hot tub and spa covers are required for all spas, with a minimum R-value of 12.
3 2. Packaged spas less than 64 square feet are exempt.
4 3. A maximum of (1) hot tub or spa per residential property is exempt. For residential HOAs with
5 individual ownership, 64 square feet of hot tub or spa space is exempt for every 10 residential
6 units.
7 4. Hot tubs and spa heating appliances will have a minimum efficiency of 92% AFUE. Electric
8 resistance and heat pump heaters will be allowed. Where condensing boilers are used, the
9 boiler supply water temperature shall be a maximum of 130F to allow for efficient boiler
10 operation.

11
12 R408.5 Other permanent natural gas or electric heating and cooking elements.

- 13
14 1. A combined 200,000 BTU budget is allowed for permanent natural gas or electric heating or
15 cooking elements at a reduced renewable offset requirement.

16
17 R409 Gas fireplace, firepit, firetable controls. Residential outdoor natural gas fireplaces,
18 firepits, and firetables shall include timers required to limit the run time of the system. Controls
19 and switching shall be configured so as not to allow continuous operation.

20 R409.1 Electric heat tape controls. Electric roof and gutter deicing systems shall include
21 either automatic controls capable of shutting off the system when outdoor temperature is above
22 40F and below 25F, and which limit the use of the system to daylight hours by means of a
23 programmable timer or automated clock, or moisture detection sensors.

24 R410 Renewable energy mitigation payment. A permit shall not be valid until all fees as
25 in effect at the time of permit submittal are paid in full, or the renewable energy system is
26 proposed for on-site credit. Nor shall a change order to the permit be released until the
27 additional fees, if any, have been paid. REMP compliance will be verified at Certificate of
28 Occupancy or Certificate of Completion according to the proposed plans. C.O. can be withheld if
29 the project is non-compliant.

30
31 R411 Pre-existing systems. Pre-existing systems, for which a prior permit was applied
32 for and granted prior to the effective date of this code are exempt from this program. Additions
33 or expansions of existing systems that require a permit will require compliance with this above
34 code program.

1
2 Pre-existing systems for which a prior REMP payment was paid and which seek to be
3 replaced shall receive a pro-rated credit calculated by the number of years since prior REMP
4 payment divided by 20 years. For example, a REMP payment made for a system permitted 10
5 years prior to the current replacement being sought will receive credit for ½ of the prior REMP
6 payment and that amount shall be deducted from the REMP payment owed on the replacement.
7 For renewable systems installed on site, full credit will be given for up to 20 years after the date
8 of installation. Credits will only be applied to properly permitted and functioning systems within
9 the scope of the adopted Energy Code and applicable Mechanical and Electrical Codes.
10 Systems installed prior to 20 years before the date of permit application are not eligible for pro-
11 ration of system credits.
12

13 Upgrades to existing mechanical equipment (boilers, heat pumps, HVAC equipment,
14 etc.) or renewable energy systems will not require submittal to the REMP program.
15

16 R412 Solar photovoltaic systems. System designer and installer must be certified by
17 Colorado Solar Energy Industries Association (COSEIA) or North American Board of Certified
18 Energy Practitioners (NABCEP), or a licensed Professional Engineer in the State of Colorado.

19 R412.1 Solar thermal. The size of solar hot water systems is limited to 500 square feet
20 of collector area absent approval by the Building Official. Systems larger than this limit will be
21 considered, but will require documentation showing year-round utilization of the system.

22 R412.2 Ground source heat pumps. In order to use ground source heat pumps for on-
23 site renewable credit, the GSHP system must supply at least 20% of the peak load for heating
24 all the exterior energy uses. Each GSHP shall be tested and balanced and the design engineer
25 shall certify in writing that it meets or exceeds a design coefficient of performance of 3.0
26 inclusion of source pump power. Design conditions for determining COP will be 30F ground loop
27 temperature measured at the GSHP inlet, and 110F GSHP load side outlet.
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30 **Section 6.** That a new section 8-1-26, entitled “REMP Fees”, is added to read as
31 follows:

32 8-1-26 REMP Fees.

33 A. Regulatory Fee:

1 1. Commencing with an application for a permit for outdoor energy use, a regulatory
2 fee shall be imposed where an applicant elects not to mitigate outdoor energy use on-site or
3 where the mitigation is not sufficient per the requirements.

4 2. The amount of the regulatory fee is established by calculations set forth in Exhibit
5 A, which calculations may be administratively amended based on the annual energy use
6 assumptions by energy use.

7 3. The regulatory fee bears a reasonable relationship to the direct and indirect costs
8 of implementing the town's comprehensive regulatory program established by this chapter.

9
10 4. The fee established by this section is not designed to raise revenues to defray the
11 general expenses of town government, but rather is a charge imposed for the purpose of
12 defraying some of the costs of the particular town services and programs described in this
13 section.

14 B. Uses: All monies collected under this section shall be recorded in a special fund
15 and shall be used for the following purposes:

16 1. To reduce fossil fuel-generated energy consumption by supporting community
17 renewable energy and energy efficiency improvements in the community;

18 2. To administer the IECC and IRC provisions in the Breckenridge Town Code;

19 3. To educate the development of industry and the public at large of the methods of
20 energy efficient construction practices and the benefits of energy conservation; and,

21 4. To achieve the goals of the SustainableBreck Plan.

22 **Section 7.** That a new section 8-1-27, entitled "Administrative Rules and Regulations"
23 shall be amended by adding the language underlined to reads as follows:

24 8-1-26 Rules and Regulations. The director of community development shall have the
25 authority from time to time to adopt, amend, alter, and repeal administrative rules and
26 regulations as may be necessary for the proper administration of this chapter. Such regulations
27 shall be adopted in accordance with the procedures established by title 1, chapter 18 of this
28 code.

1 **Section 8.** This ordinance shall be effective as provided in Section 5.9 of the
2 Breckenridge Town Charter.

3 INTRODUCED, READ ON FIRST READING, APPROVED AND ORDERED
4 PUBLISHED IN FULL this 13th day of June, 2023. A Public Hearing shall be held at the
5 regular meeting of the Town Council of the Town of Breckenridge, Colorado on the 11th day of
6 July, 2023, at 7:00 P.M., or as soon thereafter as possible in the Municipal Building of the Town.

TOWN OF BRECKENRIDGE, a Colorado
municipal corporation

By: _____
Eric S. Mamula, Mayor

ATTEST:

Helen Cospolich, CMC,
Town Clerk

Exhibit A -

Background Calculations for REMPE and CREMP submittal pages.

This page is for reference only. Values to be updated per Governing body when required. Click on individual cells to see formulas used.

This color cell is adjustable (by local Governing Body) to fit local jurisdiction choices for amount of offset and local cost of equipment installation.

This color cell is adjustable (by local Governing Body) to probe hypothetical energy use values.

PV Energy Cost Calc

Notes
Approximate average cost of PV installation in Summit County (2022), per sampling of local installers by HCC.
NREL PV Watts estimated output (at optimum conditions for solar access, w/o derate for effects of snow)
Assumed system lifespan
kWh output of system over lifespan
Calculated installation cost per kWh output for life of the system

Installed onsite energy cost to offset external site energy
 Assumed system lifespan
 Standard conversion factor between Btu's and kW
 Minimum allowed GSHP COP
 Minimum allowed ASHP COP

Residential Exterior Energy	Energy Use Units	Units	Fee	Exterior Energy Offset % Offset	Adjusted	Units
Snowmelt	82,865.00 Btu/2yr		\$56.67	100%		\$56.67 \$/ft2
Pool	331,451.00 Btu/2yr		\$226.67	100%		\$226.67 \$/ft2
Spa	428,937.00 Btu/2yr		\$283.33	100%		\$283.33 \$/ft2
Heat tape	0.35 kWh/yr		\$0.82	0%		\$0.00 \$/W
Electric patio heaters	350.00 Btu/Btu/yr		\$0.24	0%		\$0.00 \$/Btu
Gas patio heaters	364.00 Btu/Btu/yr		\$0.25	0%		\$0.00 \$/Btu
Gas fireplaces						

Commercial Exterior Energy	Energy Use Units	Units	Fee	Exterior Energy Offset % Offset	Adjusted	Units
Snowmelt	146,229.00 Btu/2yr		\$100.00	100%		\$100.00 \$/ft2
Pool	414,314.00 Btu/2yr		\$283.33	100%		\$283.33 \$/ft2
Spa	428,937.00 Btu/2yr		\$283.33	100%		\$283.33 \$/ft2
Heat tape	1.56 kWh/yr		\$3.65	0%		\$0.00 \$/W
Electric patio heaters	1,011 kWh/yr		\$2.36	10%		\$0.24 \$/W
Gas patio heaters	1008.00 Btu/Btu/yr		\$0.69	10%		\$0.07 \$/Btu
Gas fireplaces	2016.00 Btu/Btu/yr		\$1.38	10%		\$0.14 \$/Btu

Offset rates	Equipment Cost	% Credit	Adjusted	Units
GSHP	\$7,500	25%	\$1,875.00	\$/10,000 Btu installed capacity
ASHP	\$2,500	25%	\$625.00	\$/10,000 Btu installed capacity
Residential SHW	\$112.25	100%	\$112.25	\$/ft2 of array
Commercial SHW	\$3,500	100%	\$3,500.00	\$/kw of array
PV				

Exterior Energy Use Exemptions	Residential Units	Commercial Units
Snowmelt	100	100
Pool	n/a	100
Spa	64	100
Heat tape	FULL	n/a
Electric patio heaters	FULL	n/a
Gas patio heaters	FULL	n/a
Gas fireplaces	FULL	n/a

Exterior Energy Use Annual Calculations:	Value	Units	Notes
Operational Load	125	BTU/ft-Hr	Based on ASHRAE loads for Class 1: Residential & Light Commercial
Cleanup Load	45	BTU/ft-Hr	Wrisbo design manual load for 22-25°F and 5MPH wind speed.
Run Time	560	[hrs]	Based on data collected by the Colorado Climate Center from 1960-1996.
Clean Up Time	260	[hrs]	Based on data collected by the Colorado Climate Center from 1960-1996.
Total Annual Load	82	BTU/ft-sf-yr	Energy consumed per year per square foot.

Commercial Snowmelt:	Value	Units	Notes
Operational Load	175	BTU/ft-Hr	Based on ASHRAE loads for Class 2: Heavy Commercial
Cleanup Load	45	BTU/ft-Hr	Wrisbo design manual load for 22-25°F and 5MPH wind speed.
Idle Load	16	BTU/ft-Hr	Median hourly idle load; calculation performed with Gypsum - Eagle County Airport weather data.
Run Time	560	[hrs]	Based on data collected by the Colorado Climate Center from 1960-1996.
Clean Up Time	260	[hrs]	Based on data collected by the Colorado Climate Center from 1960-1996.
Idle Time	2404	[hrs]	Number of hours the Gypsum - Eagle County Airport weather file is below a 35°F slab idle temperature set point less clean up and run time.
Total Annual Load	143	BTU/ft-sf-yr	Energy consumed per year per square foot.

Residential Pool:	Value	Units	Notes
Day Use	4	[hrs]	Hours of use during day time.
Night Use	4	[hrs]	Hours of use during night time.

Calculations were performed with the DOE the Energy Smart Pools software using weather data from Dillon, CO.

Pool Set Point	85 [F]
Cover Insulation	1.5 [R value]
Wind Speed	5 [MPH]
Total Annual Load	332 [kBtu/sf-yr]

Parameter	Value	[units]	Notes
Day Use	4	[hrs]	Hours of use during day time.
Seasonal Use	10	[months]	Months per year.
Pool Set Point	82 [F]		Pool temperature set point.
Pool Insulation	68 [F]		Pool temperature set back.
Transmittance	0.1	[R value]	Thermal insulation value of vinyl cover
Visible Transmittance of water.	75%	[%]	Assumed solar exposure.
Solar Exposure Factor	60%	[%]	Assumed emissivity of pool.
Wind Speed	5	[MPH]	Assumed wind speed.
Total Annual Load	414	[kBtu/sf-yr]	Energy consumed per year per square foot.

Calculations were performed with the DOE the Energy Smart Pools software using weather data from Dillon, CO.

Parameter	Value	[units]	Notes
Day Use	10	[hrs]	Hours of use during day time.
Night Use	4	[hrs]	Hours of use during night time.
Pool Set Point	104 [F]		Spa temperature set point.
Cover Insulation	12 [R value]		Thermal insulation value of spa cover
Wind Speed	5	[MPH]	Assumed wind speed.
Total Annual Load	423	[kBtu/sf-yr]	Energy consumed per year per square foot.

Calculations were performed with the DOE the Energy Smart Pools software using weather data from Dillon, CO.

Parameter	Fireplaces		Patio Heaters		Notes
	Residential	Commercial	Residential	Commercial	
Number of heaters (input)	1	1	1	1	For example purposes only.
MBH (rated input)	20	250	20	20 [MBH]	For example purposes only.
MBH (total installed)	20	250	20	20 [MBH]	For example purposes only.
Day Use	1	48	2	4 [hrs]	Assumed hours per day, per committee meeting.
Weeks/Yr	52	2016	25	38 [weeks]	Assumed weeks per year, per committee meeting.
hrs/yr	364	2016	350	1008 [hrs]	Run hours per year.
Annual energy consumption	7280	504000	7000	20160 [kW/yr]	Energy consumed per year.
Normalized annual energy consumption	364	2016	350	1008 [kW/yr/MBH]	Energy consumed per year per installed MBH.

Outdoor Gas Appliances:

Parameter	Electric Patio Heaters		Notes
	Residential	Commercial	
Number of heaters (input)	1	1	For example purposes only.
W (rated input)	6000	6000	For example purposes only.
W (total installed)	6000	6000	For example purposes only.
Day Use	2	4	Assumed hours per day, per committee meeting.
Weeks/Yr	25	38	Assumed weeks per year, per committee meeting.
hrs/yr	350	1008	Run hours per year.
Annual energy consumption	21000	60480	Energy consumed per year.
Normalized annual energy consumption	9.33	1.01	Energy consumed per year per installed Watt.

Electric Patio Heaters:

Self Regulating Heat Tape Annual Energy Model (Pitkin County)	
Model Assumptions	
Weather Data Location:	Gypsum - Eagle County Airport
Basis Product:	Chromalox SRF-RG
Output Temperature Adjustment (linear):	Wait-Hour=m*0.5
Max Output (Watt/LF):	8.0 W
Max Output Temperature (Degrees F):	32.0 F
Reduced Output (Watt/LF):	5.0 W
Reduced Output Temperature (Degrees F):	40.0 F
Adjustment Variable (m):	- 3/8
Adjustment Variable (b):	20.0
Control #1:	Self Regulating
Control #2:	Manual System Shut-off (April-1 thru November-1)
Control #3:	Timer Switch Shut-off (1800-0600)
Control #4:	None

Seasonal and Nightly Shut-Off

Modeled Annual Energy Consumption per Linear Ft of Cable (kWh):	32.58	kWh/yr/1W
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Energy consumed per year per installed Watt.

Available Gas Combustion Thermal Efficiencies:
92%
94%
95%
96%
97%
98%
99%
100%

Notes

These assumptions were used to run an hourly annual calculation in which, each Watt-Hour/foot of energy consumption was calculated and summed. Per discussions with manufacturer's regarding the operation of "self-regulating" heat tape, the tape is modeled as consuming full rated output when the outside air temperature was below 32 F, and if the outside air temperature is above 32 F, the rate of energy consumption decreased linearly to the reduced output temperature listed by the manufacturer. Calculation accounts for seasonal and nightly shutdowns per required controls.