

**BOYNE RESORTS**

EXPERIENCE THE LIFESTYLE



**FOREVER**PROJECT

BUILDING A SUSTAINABLE TOMORROW

2030 **MASTER PLAN**

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# MESSAGE FROM OUR CEO

Dear Team Members and Friends,

Our 75-year journey as a resort company defines and demonstrates a heritage of stewardship, leadership, creativity, and innovation. Today, as Boyne Resorts endeavors to transform the North American four-season resort experience, we must also aim to help lead our industry and communities toward a sustainable tomorrow, ensuring our next 75 years and future generations are afforded the same quality of life we have and that our resorts represent. It is with this backdrop that we launched our ForeverProject.

The ForeverProject Master Plan will guide us in this mission and reflects our culture of embracing new technologies and ways of doing business. The Plan outlines efforts necessary to reach our aggressive net zero carbon emissions by 2030 goal and supports our commitment to be a leader in sustainable business practices. It is important that each of us embrace the guidance it provides. This will not only increase the likelihood of achieving these goals ourselves, it will also help inform, motivate and educate others in this critical effort. Mitigating the impacts of climate change is a responsibility each of us carries and can be accomplished together as individuals and as a company, nation, and united world.

Your contributions to our recent progress are greatly appreciated and I am hopeful you will be a proud advocate and supporter of these important efforts at work and in your communities.

Sincerely,



Stephen Kircher  
President and CEO Boyne Resorts



# ACKNOWLEDGEMENTS

Achieving Boyne Resorts' ForeverProject goals requires action and collaboration throughout our operations, commensurate with the scale of the challenge ahead. Our commitment to collaboration is reflected in the creation of this plan, which incorporates coordinated input from representatives at each resort, alongside that of corporate leadership.

Many thanks go to all who contributed to this plan and will continue to bring it to life in the coming years as we work together to build a more sustainable tomorrow.

## FOREVERPROJECT MASTER PLAN LEADERSHIP TEAM

Special thanks to the core team that tirelessly led the development of Boyne Resorts' ForeverProject Master Plan:

Amy Fonte, Big Sky Resort  
Brad Keen, Boyne Resorts  
Mari Kissinger, The Highlands

Taylor Middleton, Boyne Resorts  
Jay Scambio, Boyne Resorts

Input from each resort team and our corporate team was critical to the creation of a plan that will guide action in every area of our operations. Many thanks to those who provided support and encouragement throughout the development process:

Roland Andreasson, Boyne Resorts  
Julie Ard, Boyne Resorts  
Frederic Barbier, Boyne Resorts  
Dan Beeler, Boyne Resorts  
Mac Bevier, Loon Mountain  
Mike Chumbler, The Highlands  
Aaron Clark, Boyne Mountain  
Keith Collins, Boyne Resorts  
Jeremy Cooper, Boyne Resorts  
Michael Costello, Inn at Bay Harbor  
Jenn Dickie, Cypress Mountain  
Mike Doyle, Jr., Brighton Resort  
Bernie Fredrich, Boyne Resorts  
Ed Grice, Boyne Mountain  
Brian Heon, Sunday River  
Nick Herrin, Boyne Resorts  
Beatrice Johnson, Sugarloaf  
Stephen Kircher, Boyne Resorts

Nick Lambert, Boyne Resorts  
Tara Lauder, The Summit at Snoqualmie  
Guy Lawrence, The Summit at Snoqualmie  
Abby Layton, Brighton Resort  
Ralph Lewis, Pleasant Mountain  
Nate Maclure, Pleasant Mountain  
Kate Matthews, Sunday River  
Troy Nedved, Big Sky Resort  
Brian Norton, Loon Mountain  
Jason Perl, Boyne Mountain  
Josh Richter, Boyne Resorts  
Barb Rooney, Boyne Resorts  
Brendan Ryan, Boyne Resorts  
Karl Strand, Sugarloaf  
Bob Turner, Boyne Resorts  
Mike Unruh, Boyne Resorts  
Randy Watson, Gatlinburg SkyLift Park  
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# BOYNE RESORTS 2030 MASTER PLAN EXECUTIVE SUMMARY



**FOREVERPROJECT**  
BUILDING A SUSTAINABLE TOMORROW

Throughout our 75-year history, Boyne Resorts has created a legacy of environmental stewardship and conservation. From patenting our highly efficient snowmaking equipment nearly 50 years ago to achieving 100% clean electricity across our operations in 2021, we are mindful in prioritizing creative and innovative initiatives to protect, preserve, and sustain the land on which we depend.

While we are proud of our progress, we know that the next few years will be the most important yet if we are to mitigate impacts of the global climate crisis we currently face. Acknowledging our responsibility to do everything in our power to leave a positive legacy for future generations, Boyne Resorts is committed to achieving **net zero greenhouse gas emissions across our operations by 2030**.

The ForeverProject Master Plan was developed to provide an understanding of what it will take to get there.

Through engagement with staff and leadership, a significant amount of data and detail was gathered to help quantify the magnitude of the challenge ahead and begin to identify the actions and investments necessary to reach our shared goal. This plan charts a pathway that enables us to reduce our carbon footprint while balancing environmental and economic sustainability.

## GOALS

### NET ZERO EMISSIONS

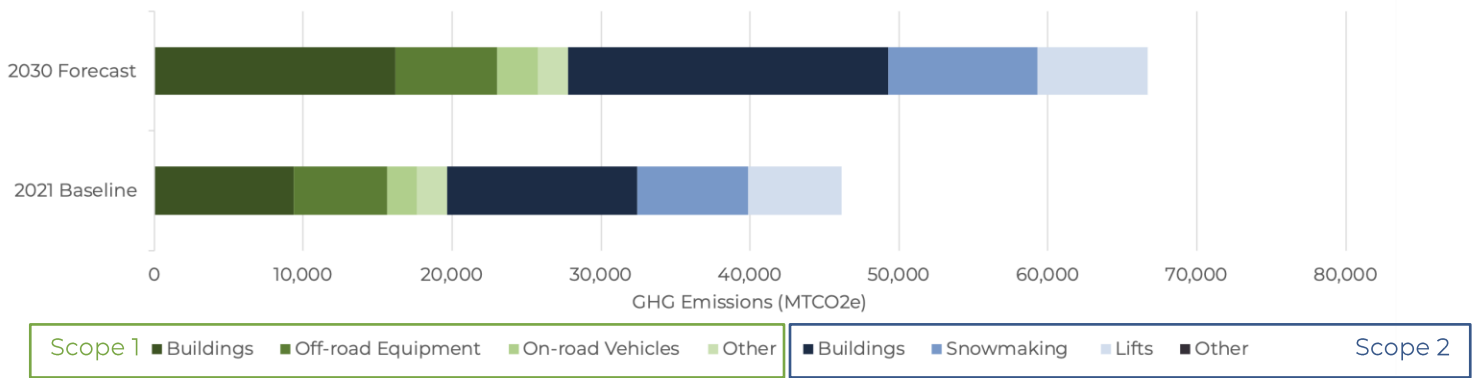
Boyne Resorts is committed to a goal of reducing carbon emissions to net zero throughout our North American operations by 2030.

### 100% CLEAN ELECTRICITY

An important step in reaching our net zero carbon emissions goal is to power all resorts and facilities with 100 percent clean electric energy.

# OUR EMISSIONS TODAY AND IN 2030

To map a pathway to net zero emissions, we first needed to understand our current emissions and future trajectory.

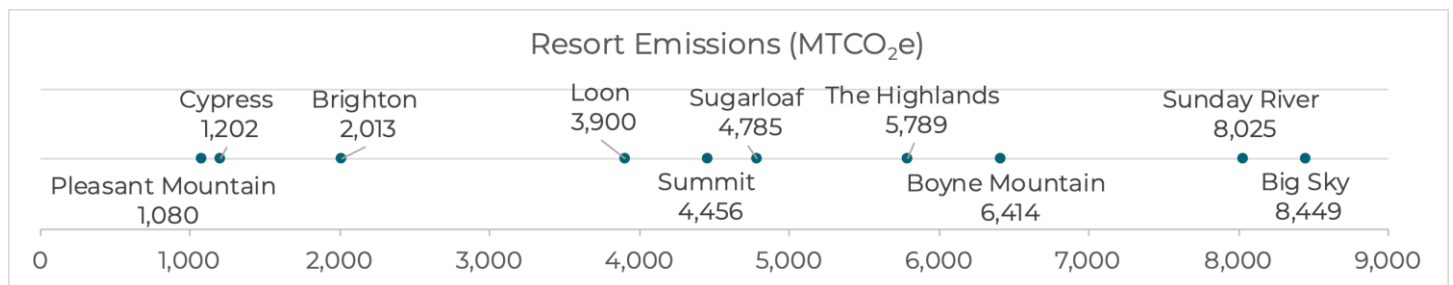


Boyne Resorts FY 2020-21 Baseline and FY 2029-30 “Business-as-Usual” Greenhouse Gas Emissions Forecast

Our company-wide fuel and electricity emissions (Scopes 1 and 2) for financial year 2020-21 was calculated. We then developed a 2030 “Business-As-Usual” emissions forecast for financial year 2029-30 that accounts for anticipated growth in terrain, buildings, lifts, snowmaking, and annual visitation at each resort. Without swift and ambitious action, Boyne Resorts’ total emissions could rise by 45% within the next seven years.

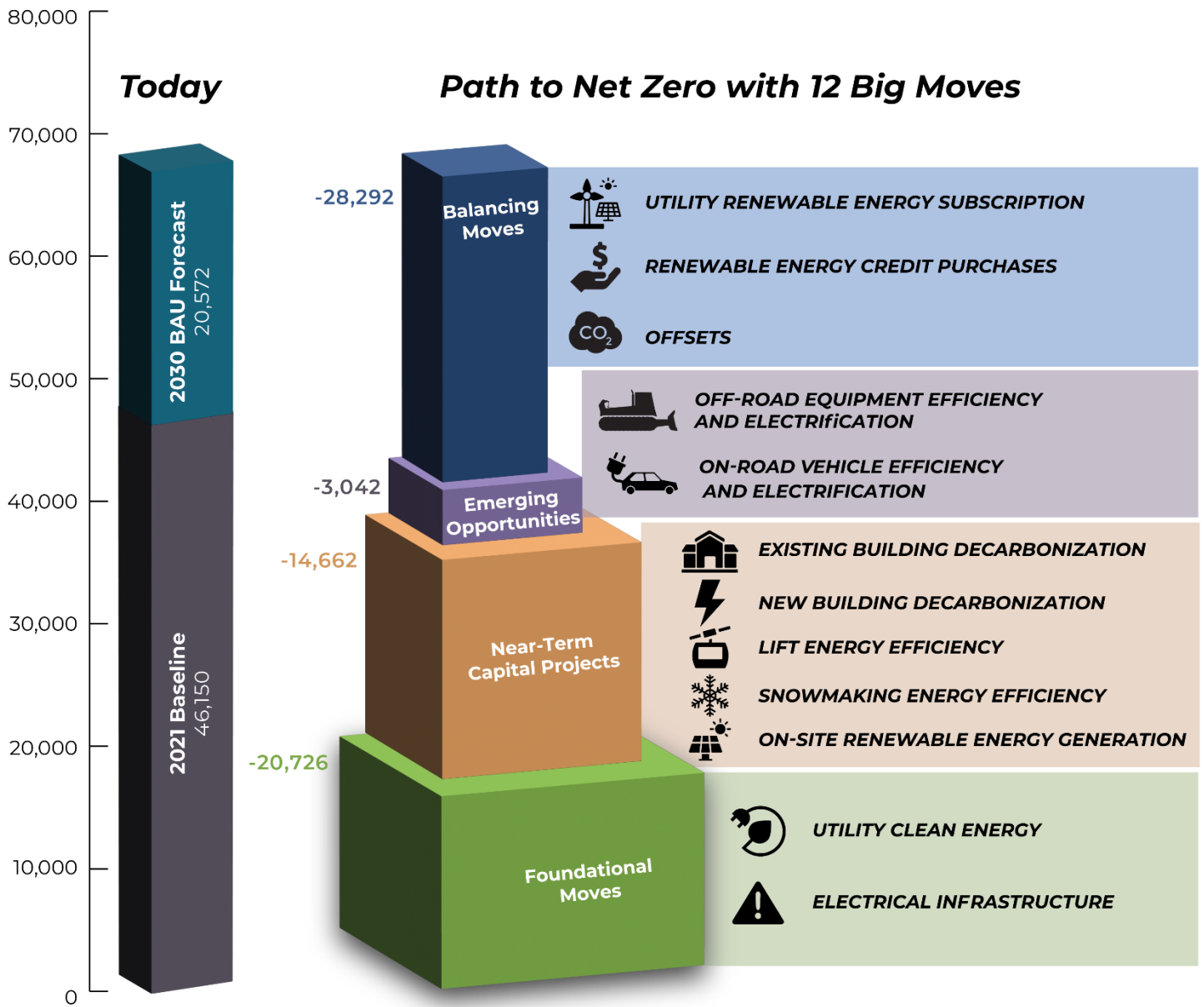
## RESORT-SPECIFIC EMISSIONS

Recognizing the unique characteristics of each of our resorts, individual emissions inventories and forecasts were created to inform the development of resort-specific pathways and action plans. The chart below summarizes total emissions by resort.



# PATHWAY TO NET ZERO EMISSIONS

Twelve high-impact actions were identified that cumulatively will propel us forward in the pursuit of our aggressive, yet attainable net zero emissions and 100% clean electricity goals. These actions are Boyne Resorts' Big Moves and they represent our commitment to unprecedented collaboration and progress on climate action across our operations.



The ForeverProject Master Plan defines a clear and strategic pathway with immediate, and short- and medium-term action steps identified for each Big Move. The plan also highlights staffing considerations along with opportunities for corporate leadership and support for resort-scale projects and initiatives.

In bringing our Big Moves to life, we are not only reducing our carbon footprint, we are realizing utility bill and maintenance cost savings, improved health and safety, and an enhanced resort experience for team members and guests.

Boyer Resorts is committed to continuing our current climate investment and ramping our level of investment to meet the scale of the challenge ahead. In addition, we recognize the importance of leveraging external funding to further accelerate our pathway to net zero.



*Photo from Big Sky Resort lift operations*



*Photo from The Highlands summer activities*

As we move forward with implementation, diligent tracking and consistent reporting on our progress can be expected. Annual reporting and bi-annual modeling updates for NSAA's Climate Challenge is also a source of progress measurement. Tracking includes evaluating how our Big Moves are playing out on the ground and is key to being prepared to adjust our course of action, if needed.

Finally, we are excited about the opportunities for partnership that this ForeverProject Master Plan creates. We

are not alone in this journey and look forward to collaborating with industry peers and local partners at each of our resorts to realize our goals over the next critical seven years.

*“Greatness is not a function of circumstance. Greatness, it turns out, is largely a matter of choice and conscious discipline.”*

*– Jim Collins*



# INTRODUCTION

## FOREVERPROJECT: BUILDING A SUSTAINABLE TOMORROW

Boyne Resorts recognizes human-driven climate change as an urgent issue for the world, as well as for the snowsports industry. In early 2021, we formalized commitments to climate action and announced our ForeverProject.

ForeverProject is an initiative to attain a sustainable tomorrow through collaboration, by positively affecting the lasting impact our resorts, team members, and guests have on the planet.

### GOALS

#### NET ZERO EMISSIONS

Boyne Resorts is committed to a goal of reducing carbon emissions to net zero throughout our North American operations by 2030.

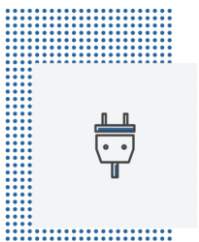
#### 100% CLEAN ELECTRICITY

An important step in reaching our net zero carbon emissions goal is to power all resorts and facilities with 100 percent clean electric energy.

In 2021, we reached an important milestone by achieving 100% clean electricity across our operations through a combination of on-site renewable generation, utility partnerships, and sourcing renewable energy credits (RECs).

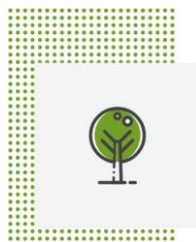
### OBJECTIVES

The ForeverProject Master Plan charts our progress toward a sustainable existence inclusive of 100% clean electricity and net zero carbon emissions throughout our operations by 2030. We are guided by three overarching principles:



#### Mindful Efficiency

Promote a culture of reduction: energy use, waste output, and water impact, and proper utilization of our human, technological, natural, and financial resources.



#### Tireless Conservation

Protect the natural environment unwaveringly, balancing minimal impact with development of outdoor recreation, and preserving or rehabilitating the land for which we are stewards.



#### Innovative Collaboration

Support and reward outreach and partnerships that extend beyond traditional boundaries, be leaders of advocacy among our team members, guests, and in our communities, industry, and environment for the long term.

## NSAA CLIMATE CHALLENGE AND SUSTAINABLE SLOPES

Led by the National Ski Areas Association (NSAA), Climate Challenge is a voluntary program dedicated to helping ski areas target and reduce greenhouse gas emissions, engage in advocacy on climate change solutions, and reap other benefits such as reduced energy costs. Each of our ten ski resorts participates in the Climate Challenge.



NATIONAL SKI AREAS ASSOCIATION  
**CLIMATE  
CHALLENGE**<sup>TM</sup>

Additionally, all of our ski areas are part of NSAA's Sustainable Slopes program and endorse the pledge to:

- Incorporate sustainability into all aspects of our resorts
- Lead by example and educate employees and guests about sustainability
- Place collaboration over competition when it comes to sustainability
- Advocate for climate protection

NATIONAL SKI AREAS ASSOCIATION  
**SUSTAINABLE  
SLOPES**<sup>TM</sup>

## MOUNTAIN COLLABORATIVE FOR CLIMATE ACTION

In June 2021 and following more than 18 months of unprecedented discussion and coordination, Boyne Resorts, Alterra Mountain Company, POWDR, and Vail Resorts entered an agreement acknowledging a shared responsibility to take a strong stance on the core issues of sustainability. In the [Mountain Collaborative for Climate Action](#) (MCCA) charter, all four resort companies commit to:

- Reduce energy use and aggressively pursue renewable energy sources
- Take climate action and advocate for effective public policy to accelerate the shift to a renewable energy economy
- Take strong efforts and set goals to reduce waste
- Be responsible stewards of our environment
- Share best practices
- Support the NSAA Sustainable Slopes platform



In addition, Boyne Resorts and its fellow signatories pledge to:

- Incorporate sustainability into all aspects of our mountain resorts
- Lead by example and educate employees and guests about sustainability
- Place collaboration over competition when it comes to sustainability
- Advocate for climate protection

The ForeverProject Master Plan represents the next step in our sustainability journey and will continue to guide Boyne Resorts as we deliver on our climate goals and fulfill our commitments under Climate Challenge, Sustainable Slopes, and Mountain Collaborative for Climate Action.

# COMPANY-WIDE MASTER PLAN

## A LOOK BACK AND AHEAD

As we look to accelerate progress toward net zero carbon emissions over the next seven years, we can also look back on Boyne Resorts' 75-year history and our legacy of environmentally conscious and conservation-related efforts. As dedicated stewards of more than 30,000 acres, we take pride in our rich history of implementing creative and innovative initiatives to protect, preserve, and sustain the land on which we depend.

### 1970s & 80s



Launched a tree planting project resulting in thousands of pines being planted in Michigan. Today, these trees tower at nearly 50 feet in height.

Obtained patents on energy-efficient snowmaking equipment, that still inspires work to improve this technology and its efficiency; the equipment used today reduces energy consumption by 96% compared to the technologies used in the 1970s, while also delivering a superior snow product that has transformed the quality of the skiing surface.

Restored a hydropower dam acquired in a land purchase that has supplied clean power for roughly 10% of Boyne Mountain Resort's energy consumption over the last 45 years.

### 1990s & 2000s

Focused on reducing energy consumption at three New England resorts, saving a combined 30 million kilowatts consumed for snowmaking between 2007 and 2020.

Formed resort-based green committees to activate local sustainability practices.

### 2010 to TODAY



Created a 1,000-acre preserve in 2010, vowing to nurture the area's forests, waterways, and fisheries.

Announced ForeverProject in January 2021 and achieved 100% clean electricity through purchase of Renewable Energy Credits (RECs).

Signed Mountain Collaborative for Climate Action charter in June 2021, uniting us, Alterra Mountain Company, POWDR, and Vail Resorts in a pledge to place collaboration over competition when it comes to strong action on climate change.

Installed a large-scale solar array at Boyne Mountain Resort.

# GREENHOUSE GAS EMISSIONS PROFILE AND FORECAST

## BASELINE EMISSIONS

To create a pathway for achieving Boyne Resorts’ net zero emissions by 2030 goal, we first needed to understand our current emissions.

Greenhouse gases (GHG) are causing climate change and are produced from the energy and fuel used in our resort buildings, snowmaking and lift operations, fleet vehicles, and heavy equipment. There are also GHG emissions associated with other activities attributable to Boyne Resorts’ operations such as team member and guest transportation, waste disposal, and the consumption of goods and services. For the purposes of GHG accounting, emissions fall into different “Scopes” as shown in Figure 1.

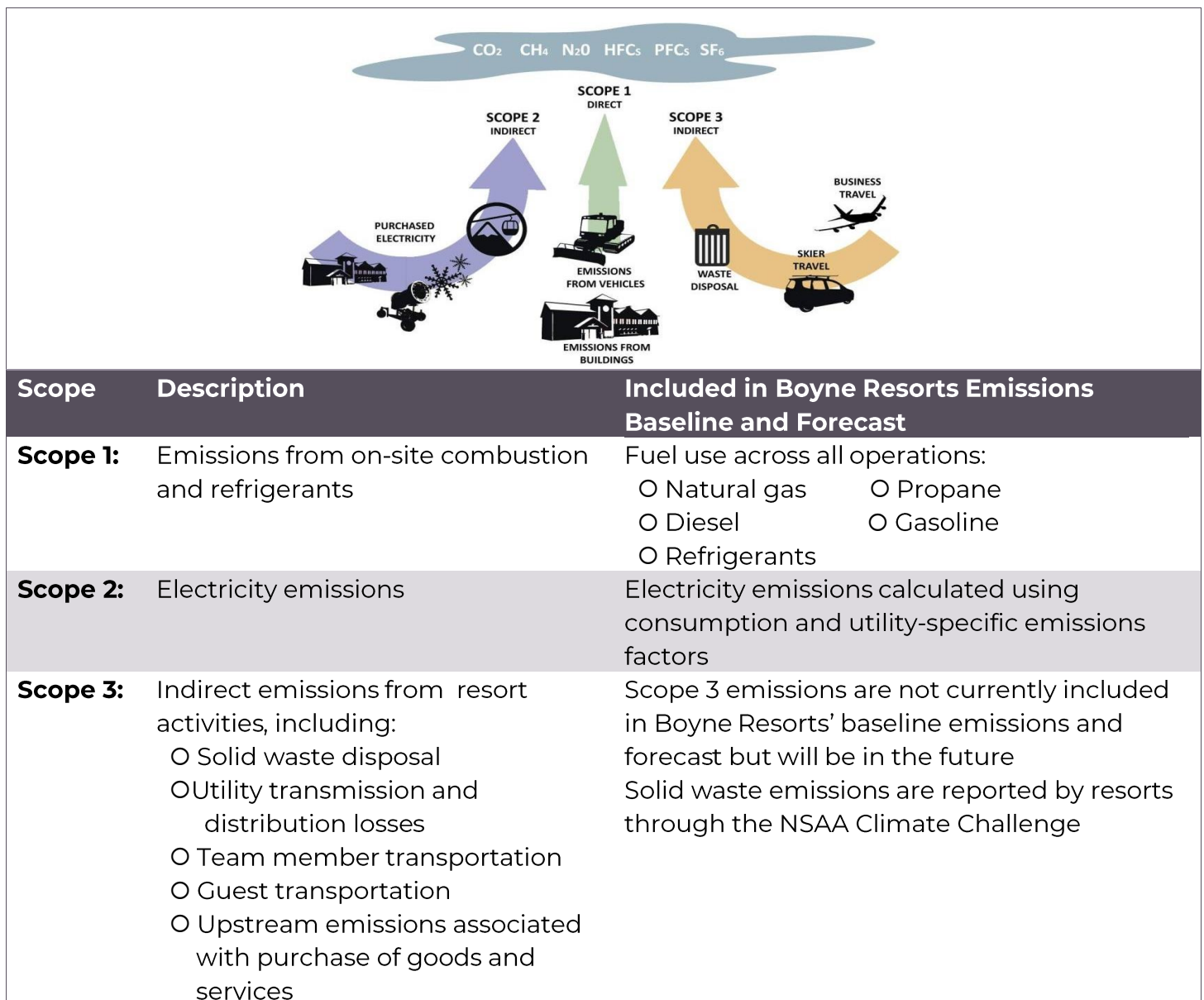


Figure 1. Greenhouse Gas Emissions Scopes and Sources

Boyne Resorts' GHG accounting aligns with industry best practices and NSAA emissions reporting requirements in considering Scope 1 and 2 emissions associated with our operations. These emissions occur from energy and fuel used to power buildings, operations, and vehicles directly under our operational control. Scope 3 emissions such as solid waste disposal, utility transmission and distribution losses, and team member transportation are not currently included in Boyne Resorts' baseline emissions and forecast. However, each resort tracks and reports solid waste emissions through participation in NSAA's Climate Challenge, and Boyne Resorts will add Scope 3 emissions to company-wide reporting in the future.

In Financial Year (FY) 2020-21, our company-wide Scope 1 and 2 emissions were 46,150 metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e). Figure 2 shows the breakdown of our total emissions by Scope and end use.



Figure 2. Boyne Resorts FY 2020-21 Emissions Baseline (MTCO<sub>2</sub>e)

### Data Notes














Inn at Bay Harbor/Cottages/Golf Clubs, Boyne Country Sports city stores and warehouses, and the company's administrative offices data was not finalized at the time of plan development nor included in our current baseline and forecast. This data will be included in future emissions inventories.

For resorts without electrical and fuel sub-metering, breakdown of electricity and fuel use was calculated with resort input.

The baseline is calculated for financial year 2020-21. We recognize that operational impacts associated with the COVID-19 global pandemic may have influenced emissions.

The company-wide emissions baseline for FY 2020-21 includes Scope 1 and 2 emissions from our ten ski resorts and Gatlinburg SkyLift Park. Table 1 provides a breakdown by end-use and location. Recognizing each property's unique characteristics that shape its current and future emissions trajectory, resort profiles were developed for inclusion in the ForeverProject Master Plan.

Table 1. Boyne Resorts FY 2020-21 Greenhouse Gas Emissions by End Use (MTCO<sub>2</sub>e) and Location

	Property Name	Buildings	Lifts	Snowmaking	Vehicles & Equipment	Other Scope 1 Emissions	Total
	<b>Big Sky Resort</b>	4,871	1,929	423	1,110	117	8,449
	<b>Sunday River Resort</b>	2,650	848	2,627	1,053	26	8,025
	<b>Boyne Mountain Resort</b>	4,688	545	737	193	251	6,414
	<b>The Highlands</b>	3,660	545	817	743	333	5,789
	<b>Sugarloaf</b>	1,184	589	1,434	1,135	442	4,785
	<b>The Summit at Snoqualmie</b>	2,044	999	15	1,392	5	4,456
	<b>Loon Mountain Resort</b>	1,133	579	1,246	682	260	4,005
	<b>Brighton Resort</b>	1,086	124	100	660	43	2,013
	<b>Cypress Mountain</b>	313	9	6	865	10	1,202
	<b>Pleasant Mountain</b>	490	76	62	441	11	1,080
	<b>Gatlinburg SkyLift Park</b>	30	7	0	0	0	37
	<b>Inn at Bay Harbor</b>	<i>Data not finalized at time of plan development</i>					
	<b>Boyne Country Sports</b>	<i>Data not finalized at time of plan development</i>					
	<b>Corporate Facilities</b>	<i>Data not finalized at time of plan development</i>					
<b>Total</b>		<b>22,147</b>	<b>6,251</b>	<b>7,468</b>	<b>8,272</b>	<b>2,012</b>	<b>46,150</b>
<b>Percent of total emissions</b>		48%	14%	16%	18%	4%	100%

## BUSINESS-AS-USUAL FORECAST

In the absence of strong action, a substantial increase of Boyne Resorts' GHG emissions can be expected. Table 2 shows baseline energy usage for Financial Year 2020-21 along with forecasted growth by 2029-30—minus swift and aggressive action and when accounting for planned expansion of the number of buildings and lifts, terrain, and snowmaking systems, and projected growth in annual visitation.

As shown in Figure 3, such expansion and growth results in a “Business-as-Usual” emissions forecast of a 66,722 MTCO<sub>2</sub>e or 45% increase by 2030 in the absence of targeted climate action.

Table 2. Boyne Resorts Business-As-Usual Forecasted Increase

### DRIVERS OF CHANGE IN GHG EMISSIONS

**New Buildings:** Anticipated number and square footage of new and upgraded buildings

**Terrain Expansion:** Planned expansion of groomed acreage for snowsports

**Annual Resort Visits:** Projected visitor total

**Lifts:** Planned installation of replacement and additional lifts

**Snowmaking:** Planned expansion of snowmaking infrastructures

**Energy Code Requirements:** Adopted IECC codes enforced by local government

**Utility Emissions Factor:** Current and anticipated emissions associated with each unit of energy used

	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use	Percentage Increase
Scope 1	Natural Gas	Buildings	658,348 therms	771,199 therms	18%
	Propane	Buildings	1,023,210 gallons	2,105,703 gallons	106%
	Diesel	Off-Road Equipment	614,450 gallons	671,210 gallons	9%
	Diesel	On-Road Vehicles	54,920 gallons	70,451 gallons	28%
	Gasoline	On-Road Vehicles	163,805 gallons	228,336 gallons	39%
Scope 2	Electricity	Buildings	40,595 MWh	68,934 MWh	70%
	Electricity	Lifts	21,469 MWh	24,912 MWh	16%
	Electricity	Snowmaking	28,998 MWh	39,395 MWh	36%

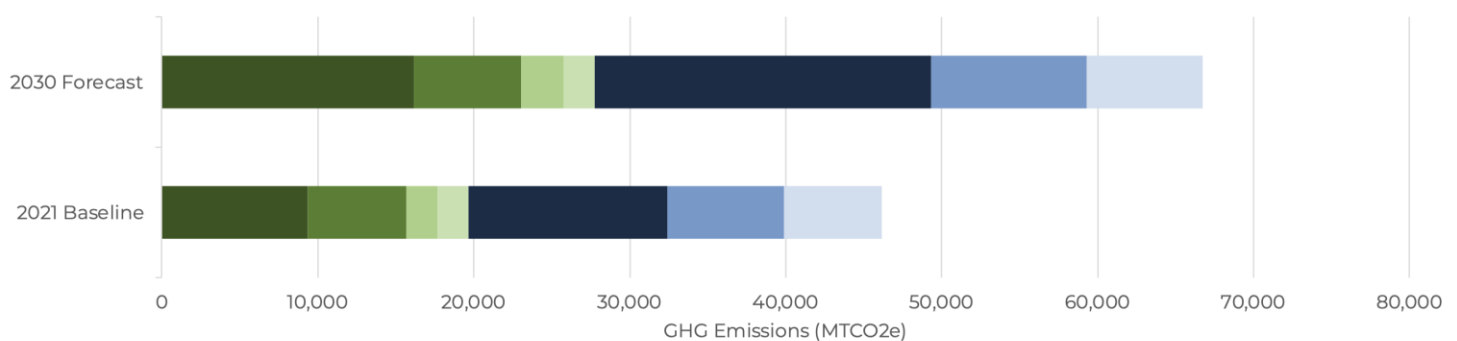


Figure 3. Boyne Resorts FY 2020-21 Baseline and FY 2029-30 Business-as-Usual Greenhouse Gas Emissions Forecast

## BOYNE RESORTS' BIG MOVES

To achieve our net zero by 2030 goal, we must disrupt the relationship between growth and GHG emissions. This plan charts a pathway of swift and ambitious action on climate that supports our projected growth and ability to maintain economical sustainability, while still being responsible stewards and providing exceptional guest experiences into the future.

We identified twelve high-impact actions that cumulatively, can position us to achieve our net zero emissions (NZE) and 100% clean electricity goals. These actions are Boyne Resorts' Big Moves and represent our commitment to unprecedented collaboration on and leadership of climate action across our operations. These Big Moves are naturally at varying stages of development and readiness and grouped within four categories to inform our phased approach to action:

### Foundational Moves

Big Moves that lay the foundation for implementing all other moves and the transition to net zero emissions

### Near-Term Capital Projects

Big Moves primed for early action using market-ready technology

### Emerging Opportunities

Big Moves based on implementation of emerging technologies

### Balancing Moves

Big Moves that bridge the gap to carbon neutrality after maximizing the impact of all other moves.

Figure 4 shows the cumulative impact of implementing Big Moves in all four categories to achieve net zero emissions in 2030. Our Big Moves do not advance in isolation. Rather, they interact and are interdependent with one another. Multiple pathways to net zero emissions may be possible. To reach our goals, an ongoing practice of balancing priorities and opportunities at each resort, as well as at the corporate scale is simply imperative.



*The Summit at Snoqualmie*



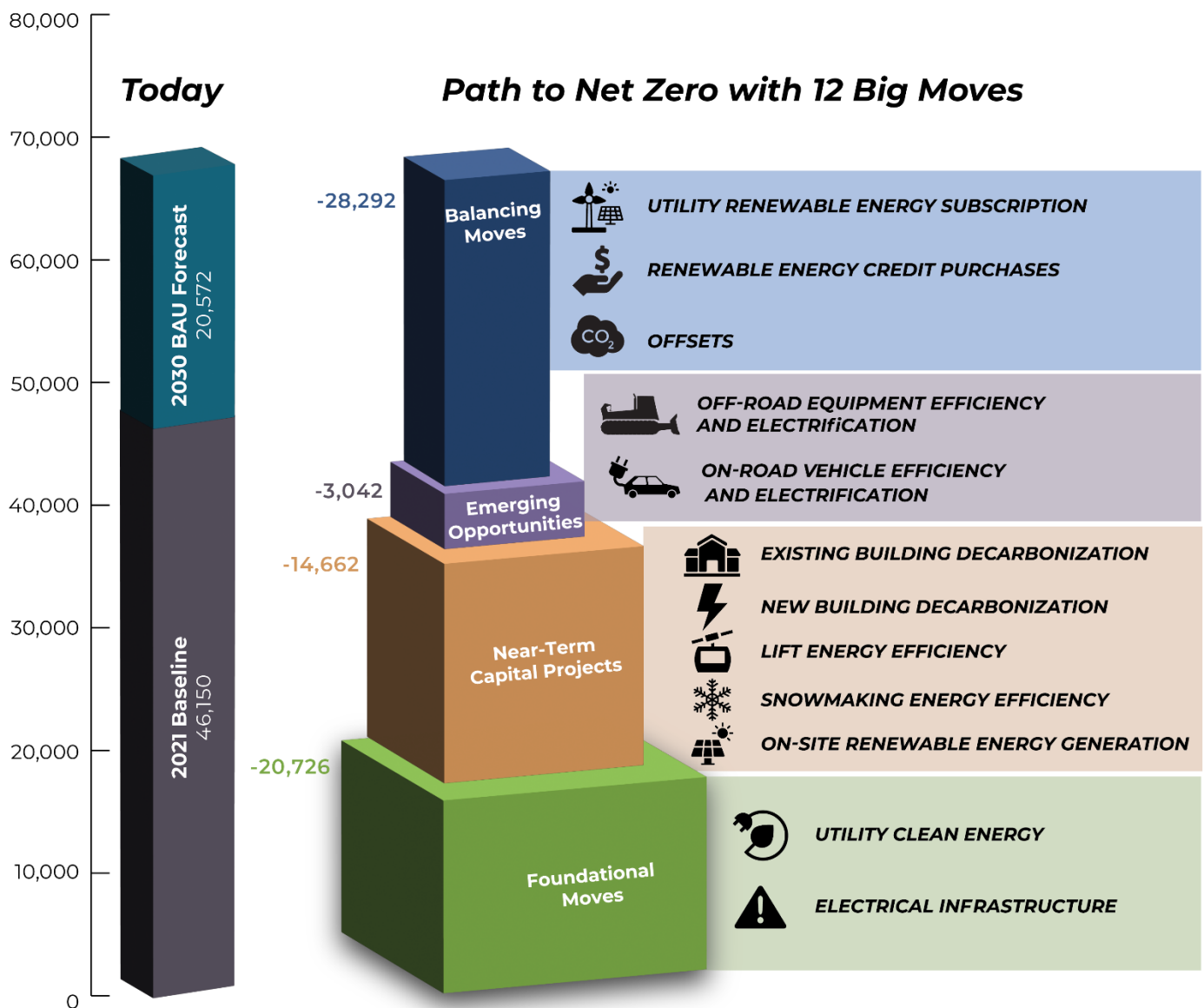














Figure 4. Impact of Boyne Resorts' Big Moves

Table 3 lists our twelve Big Moves and correlating commitments. These moves were developed through analysis of the company's GHG emissions profile and informed by a series of workshops conducted to identify our opportunities and critical issues, and the level of ambition required for each. These Big Moves also draw on industry best practices and guidance. Figure 5 defines a pathway to net zero while Table 4 demonstrates the impact of each Big Move. For modeling purposes, the cumulative impact of implementing each Big Move are rolled up from measures taken at the resort level. The performance targets reflect a weighted average of targets at all resorts.

Table 3. Boyne Resorts' Big Moves

Big Move		Our Commitment
<b>Foundational Big Moves</b>		
	<b>Utility Clean Energy</b>	Support clean grid-supplied energy at local, state, and national scales.
	<b>Electrical Infrastructure</b>	Ensure our electrical infrastructure is reliable, resilient, and ready to handle the electrification of buildings and vehicles.
<b>Near-Term Capital Projects</b>		
	<b>Existing Building Decarbonization</b>	Invest in maximizing the efficiency of existing buildings; electrify building systems whenever feasible.
	<b>New Building Decarbonization</b>	Establish guidelines for ensuring new buildings are as efficient as possible and building systems are electrified whenever feasible.
	<b>Lift Energy Efficiency</b>	Improve the efficiency of existing chairlifts and ensure all replacement and new lifts are the most efficient available.
	<b>Snowmaking Energy Efficiency</b>	Maintain focus on improving efficiency in snowmaking practices and ensure any new snowmaking equipment is as efficient as possible.
	<b>On-Site Renewable Energy</b>	Install on-site renewable generation to power resorts whenever feasible.
<b>Emerging Opportunities</b>		
	<b>Off-Road Equipment Efficiency and Electrification</b>	Improve the efficiency of off-road equipment and replace with electric alternatives whenever possible.
	<b>Vehicle Efficiency and Electrification</b>	Improve the efficiency of fleet vehicles and replace with electric alternatives whenever possible.
<b>Balancing Moves</b>		
	<b>Renewable Energy Subscriptions</b>	Subscribe to local utility renewable energy programs.
	<b>Renewable Energy Credit Purchase</b>	Purchase high-quality RECs to account for any energy not generated on-site or purchased through local subscription programs.
	<b>Offsets</b>	Purchase third-party verified carbon offsets to account for any remaining emissions.

## BOYNE RESORTS' PATHWAY TO NET ZERO

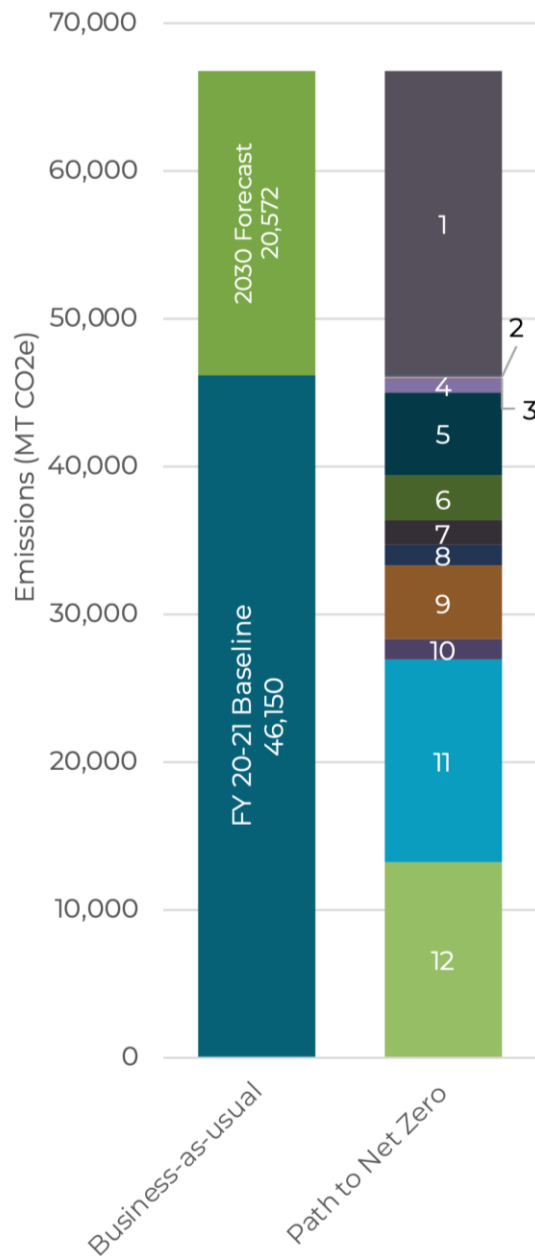


Figure 5. Boyne Resorts Pathway to Net Zero Emissions by 2030

Table 4. Summary of Big Moves impact and contribution to net zero goal

Boyne Resorts Big Moves	2030 Performance Target(s)	Contribution to Net Zero Goal
<b>1 Utility Clean Energy</b>	N/A	20,624 MTCO <sub>2e</sub> 31%
<b>2 Electrical Infrastructure</b>	4% of off-road diesel usage attributed to backup generators 33% savings associated with improved reliability (estimated)	102 MTCO <sub>2e</sub> <1%
<b>3 Lift Energy Efficiency</b>	240 MWh/year electricity savings	37 MTCO <sub>2e</sub> <1%
<b>4 Snowmaking Energy Efficiency</b>	13,146 MWh/year energy savings	979 MTCO <sub>2e</sub> 1%
<b>5 Existing Building Decarbonization</b>	33% energy reduction 45% electrification of systems	5,593 MTCO <sub>2e</sub> 8%
<b>6 New Building Decarbonization</b>	97.3 kBtu/sq. ft. Average Energy Use Index (EUI) UI of new buildings 76% electrification of new buildings	3,091 MTCO <sub>2e</sub> 5%
<b>7 Off-Road Equipment Efficiency &amp; Electrification</b>	24% off-road diesel usage reduction	1,624 MTCO <sub>2e</sub> 2%
<b>8 On-Road Vehicle Efficiency &amp; Electrification</b>	67% gasoline usage reduction 41% on-road diesel usage reduction	1,418 MTCO <sub>2e</sub> 2%
<b>9 On-Site Renewable Energy Generation</b>	6.1 MW of on-site solar installed	4,961 MTCO <sub>2e</sub> 7%
<b>10 Utility Renewable Energy Subscription</b>	2,092 MWh/year total subscribed electricity	1,363 MTCO <sub>2e</sub> 2%
<b>11 REC Purchases</b>	19,359 MWh/year REC purchases	13,697 MTCO <sub>2e</sub> 21%
<b>12 Offset Purchases</b>	13,232 MTCO <sub>2e</sub> /year offsets purchased to reach net zero	13,232 MTCO <sub>2e</sub> 20%

# FOUNDATIONAL BIG MOVES

More than half of Boyne Resorts' emissions are associated with electricity usage. Therefore, achieving our 100% clean electricity commitment is critical to reaching our 2030 net zero emissions goal (Figure 6). Partnerships with electric utilities serving our resorts are essential to implementing our Foundational Big Moves: utility clean energy and electrical infrastructure.

Big Move	Our Commitment	Contribution to NZE Goal
 <b>Utility Clean Energy</b>	Support clean grid-supplied energy at local, state and national scales.	31%
 <b>Electrical Infrastructure</b>	Ensure electrical infrastructure is reliable, resilient, and ready to handle electrification of buildings and vehicles.	<1%

Foundational Big Moves  
 FY 2029-30 Total Big Moves Impact = 66,722 MTCO<sub>2e</sub>

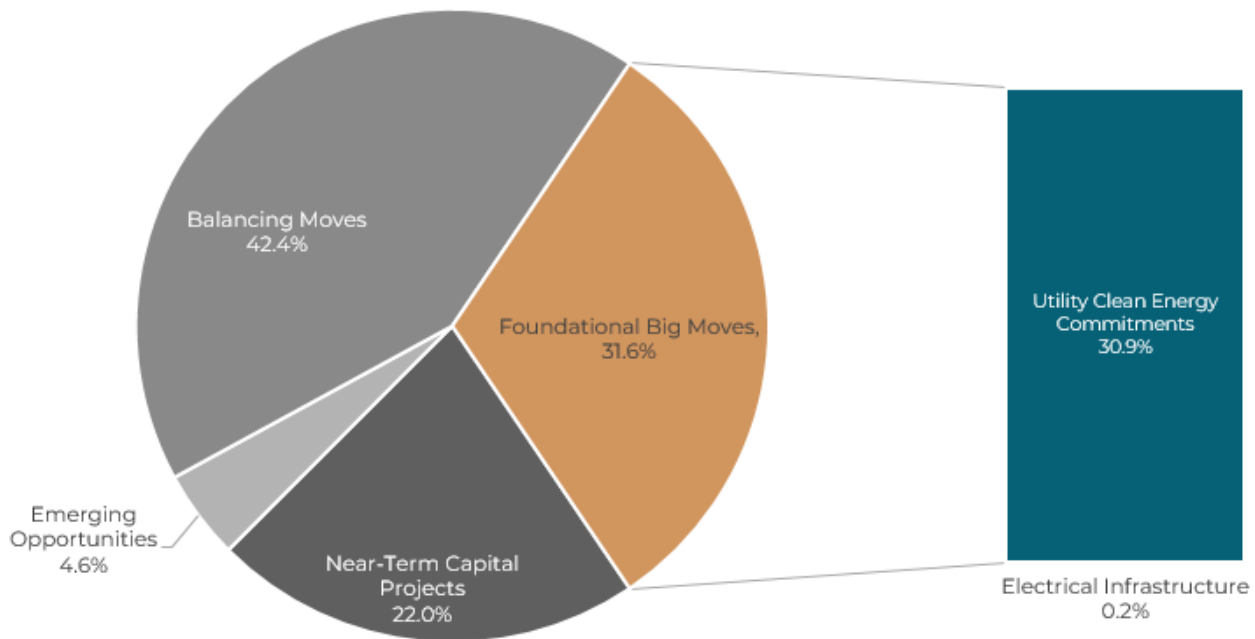


Figure 6. Foundational Big Moves Contribution to Net Zero Goal

# UTILITY CLEAN ENERGY COMMITMENTS



**Total Annual Emissions Avoided in 2030:**  
20,624 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
31% reduction from business-as-usual  
forecast

Several resorts are located in states that have adopted a Renewable Portfolio Standard (RPS), establishing a minimum percentage of electricity supply that must be generated from renewable sources for some utilities. In addition, many utilities serving our resorts have established their own clean energy requirements. For the purpose of modeling future emissions, we assume that all utilities will achieve their legal and/or stated commitments related to clean energy. Figure 7 shows the impact of state and utility clean energy commitments on Boyne Resorts' emissions forecast. This shift would essentially offset the impact of growth, resulting in a stabilization of total emissions by 2030, but would not provide a significant net reduction.

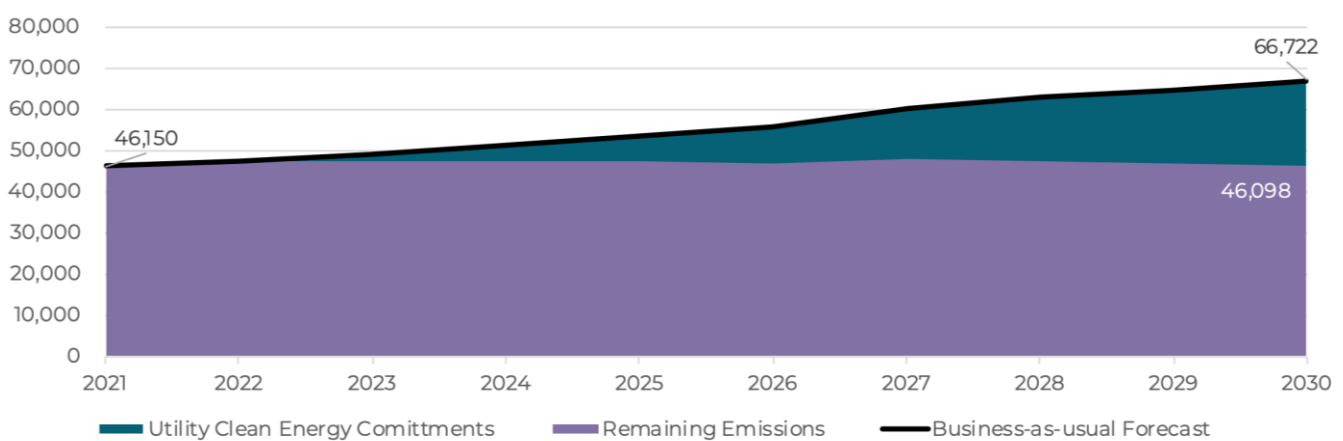


Figure 7. Boyne Resorts Business-As-Usual GHG emissions are forecast with assumption that all utility and state clean energy commitments are met

Table 5 provides an overview of state and utility commitments impacting each of our resorts, along with the gap that must be bridged in order for us to achieve our 100% clean electricity commitment.

The remaining eleven Big Moves define action required for Boyne Resorts to bridge the clean energy gap and achieve net zero carbon emissions collectively and at each resort.

Table 5. State and utility clean electricity and net zero emissions (NZE) commitments impacting Boyne Resorts, and the gap between current commitments and Boyne Resorts' 2030 100% clean electricity commitment

Utility	Properties Served	Emissions/Carbon Goals	State RPS	2030 Clean Energy Gap
Northwestern Energy	Big Sky Resort	80% Carbon Free by 2044; NZE 2050	None (Expired)	35%
Consumers Energy	Boyne Mountain Resort Inn at Bay Harbor	NZE 2040	35% by 2025	63%
Great Lakes Energy	The Highlands Boyne Mountain Resort	None publicly available	35% by 2025	37%
PacifiCorp: Rocky Mountain Power	Brighton Resort	74% emissions reduction by 2030; 98% by 2050	Voluntary	62%
BC Hydro	Cypress Mountain	Currently >98% carbon-free	None	1%
Sevier County Electric (TVA)	Gatlinburg SkyLift Park	70% carbon intensity reduction by 2030; 80% by 2035; NZE 2050	None	30%
Constellation	Loon Mountain Resort Sugarloaf Resort Sunday River	95% carbon free by 2030; 100% by 2040	25.2% by 2025 (NH) 80% by 2030 (ME)	5%
Central Maine Power	Pleasant Mountain Sugarloaf Resort Sunday River	None publicly available	80% by 2030	20%
Puget Sound Energy	The Summit at Snoqualmie	NZE by 2030; 100% carbon free by 2045	15% by 2020	0%

## IMPLEMENTATION FRAMEWORK

While implementation of this Big Move lies with the utility companies serving our resorts, we can take action at the corporate, state, and local levels to support and advocate for utility-supplied clean energy.

Immediate	Short-Term	Medium-Term
Develop communication resources and tools for resorts to use in engaging with local utilities.	Advocate for clean energy commitments and progress at the local utility, municipal, and state scales.	Explore potential for local utility partnerships to support utility-scale renewable generation projects.



# ELECTRICAL INFRASTRUCTURE



**Total Annual Emissions Avoided in 2030:**

102 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**

<1% reduction from baseline

**Performance Targets:**

1. Percent of off-road diesel usage attributed to backup generators: 4%
2. Estimated savings associated with improved reliability: 33%

This Big move involves making improvements to electrical infrastructure. This strategy not only lowers emissions by reducing backup generator use, it may be required to support other Big Moves. Electrical infrastructure improvements are necessary to maximize feasibility and effectiveness of increased electrical use due to electrification. Actions to improve electrical infrastructure and resilience vary, as some resorts currently experience significant disruptions and others rarely have issues. Improvements could include installing battery storage/backups, upgrading on-mountain electrical infrastructure, and working with local electric utilities to address issues.

## IMPACT

### Energy Use Impact in 2030

Table 6. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the Electrical Infrastructure Big Move

<b>Building Electricity Use (MWh)</b>	135 MWh increase
<b>Off-Road Diesel Usage (gallons)</b>	11,035 gallons reduction

## CO-BENEFITS



Improved guest  
experience



Improved  
health & safety



Reduced  
maintenance costs

# IMPLEMENTATION FRAMEWORK

## Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"><li>• Document reliability or capacity concerns at individual resorts.</li><li>• Engage utilities to explore solutions to improve reliability.</li><li>• Identify any improvements needed to support future electrification.</li></ul>	<ul style="list-style-type: none"><li>• Install submetering to allow improved tracking of electricity use.</li><li>• Budget for infrastructure upgrades, including potential for corporate-level funding to support individual resorts.</li></ul>	<ul style="list-style-type: none"><li>• Complete required upgrades and improvements to enhance electrical resilience and reduce reliance on backup generation.</li></ul>

## Staffing Considerations

- Time required to support identification of electrical infrastructure concerns and oversee any improvements is minimal.

## Challenges

- A lack of funding for up-front costs at the resort level may delay or be prohibitive to completing infrastructure upgrades required for future electrification.

## Opportunities for Local Action




- Engage local utilities to explore solutions to improve electrical reliability and resilience.
- Work with local contractors to obtain quotes for necessary electrical improvements.
- Engage neighbors to identify any widespread reliability issues; explore options for infrastructure cost-sharing.





# NEAR-TERM CAPITAL PROJECTS

Several of our Big Moves are primed for early action and we are already taking steps toward implementation. Market-ready technology exists to facilitate near-term, high-impact capital projects that decarbonize our existing and new buildings, improve the efficiency of our lifts and snowmaking, and ramp up on-site renewable energy generation at resorts.

Big Move	Our Commitment	Contribution to NZE Goal
 <b>Existing Building Decarbonization</b>	Invest in existing buildings to ensure that they are as efficient as possible and electrify building systems whenever feasible.	8%
 <b>New Building Decarbonization</b>	Establish guidelines to ensure that new buildings are as efficient as possible and that building systems are electrified whenever feasible.	5%
 <b>Lift Energy Efficiency</b>	Improve the efficiency of existing lift equipment and ensure that any replacements or new lifts are as efficient as possible.	<1%
 <b>Snowmaking Energy Efficiency</b>	Improve the efficiency of existing snowmaking practices and ensure that any new snowmaking equipment is as efficient as possible.	1%
 <b>On-Site Renewable Energy</b>	Install on-site renewable generation to power resorts whenever feasible.	7%

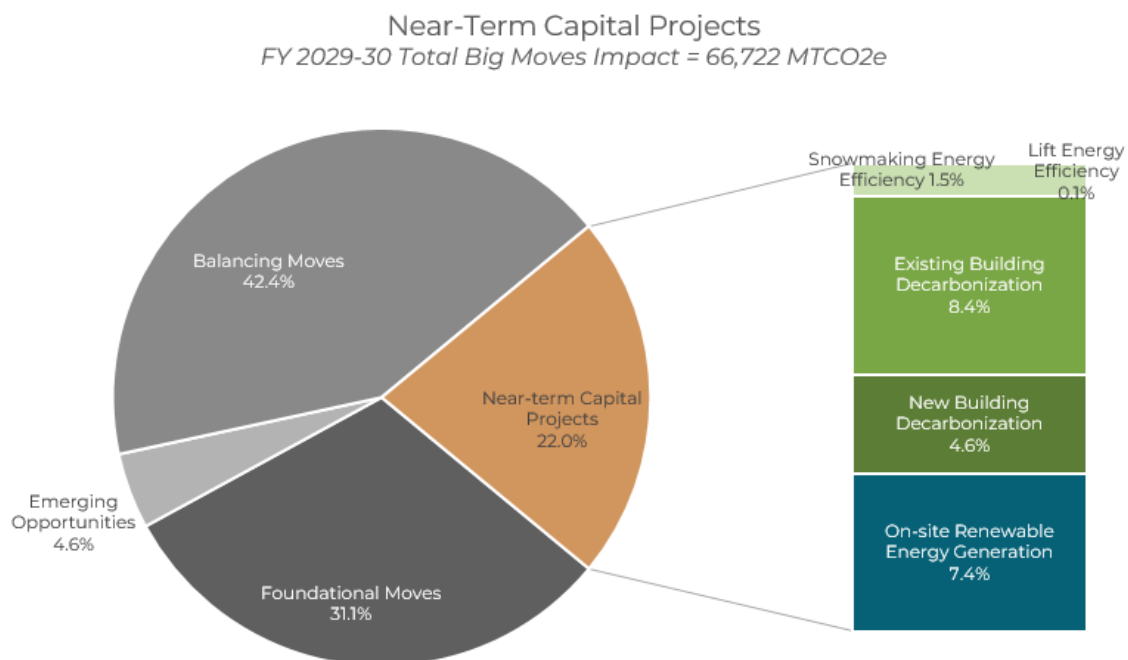


Figure 8. Near-Term Capital Projects Big Moves Contribution to Net Zero Goal



## EXISTING BUILDING DECARBONIZATION



**Total Annual Emissions Avoided in 2030:**  
5,593 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
8% reduction from BAU forecast

### Performance Targets:

1. Energy Reduction: 33%
2. Electrification: 45%

This Big Move involves reducing emissions from buildings that are already built. Decarbonization of existing buildings can be achieved through:

1. **Efficiency improvements** such as LED lighting upgrades, insulation, building automation system improvements, high efficiency equipment, etc.
2. **Electrification** by swapping all equipment to run on electricity rather than propane, natural gas, or other fossil fuel sources. An example of electrification would be to replace natural gas or propane space and water heating with electric heat pump technologies. Note that electrifying equipment almost always also means increasing efficiency.

## MODEL INPUTS

Targets for Existing Building Decarbonization at the corporate scale were developed based on energy use and electrification targets at individual resorts. Resort targets for energy reduction by 2030 range from 10% to 40%, and targets for existing building electrification range from 20% to 80%. Factors that influenced resort-level target setting include improvements that have already been made, fuel types currently used, the age and condition of resort buildings, and any utility incentives available locally.

## IMPACT

### Energy Use Impact in 2030

Decarbonizing existing buildings will reduce natural gas and propane use but will increase electricity consumption as a result of electrification.

Table 7. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the Existing Building Decarbonization Big Move

<b>Buildings Electricity (MWh)</b>	400 MWh increase in use due to electrification
<b>Buildings Natural Gas (therms)</b>	360,482 therms reduction
<b>Buildings Propane (gallons)</b>	689,212 million gallons reduction

## CO-BENEFITS

 Improved building comfort	 Improved health & safety	 Reduced maintenance costs
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## IMPLEMENTATION FRAMEWORK

### Action Steps

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Complete energy audits on high-energy use and larger buildings to identify opportunities for efficiency and electrification improvements.</li> <li>Identify opportunities for building retirement and/or consolidation.</li> </ul>	<ul style="list-style-type: none"> <li>Implement low-cost opportunities and submit budget requests for priority capital expenses.</li> <li>Develop a plan to replace mechanical equipment with high efficiency and all electric equipment at end of life.</li> </ul>	<ul style="list-style-type: none"> <li>Complete identified efficiency and electrification capital improvements.</li> <li>Complete energy audits not included in phase 1 of improvements.</li> </ul>

### Staffing Considerations

- Time required to manage the energy audits and building improvements as well as to monitor and track savings is significant.
- Training resort team members in energy efficiency best-practices will help maximize the impact of improvements and result in additional savings.

### Challenges

- Electrification opportunities may be limited for resorts or buildings without reliable electrical infrastructure.

### Opportunities for Local Collaboration

- Maximize the use of state, utility, and local incentives for energy efficiency improvements and electrification.
- Partner with local utilities to explore the potential for innovative demonstration electrification projects.
- Engage guests by highlighting efficiency saving measures and encouraging energy saving behavior.



## NEW BUILDING DECARBONIZATION

**Total Annual Emissions Avoided in 2030:**  
3,091 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
5% reduction from BAU forecast

### **Performance Targets:**

1. Average EUI: 97.3 kBtu/sq. ft.
2. Percent Electrification : 76%

This Big Move involves designing new buildings efficiently from the start and installing all-electric space heating, water heating, and kitchen equipment in order to minimize their contribution to our future carbon emissions. Decarbonization of new buildings can be achieved through:

- 1. Minimizing their Energy Use Intensity (EUI)**, or the energy use per square foot (typically measured in kBtu/sq. ft.) through efficient building practices and equipment. Optimizing building energy performance is key to cost effective building electrification.
- 2. Electrification** of building systems and equipment. For example, installing electric heat pump technologies in place of propane furnaces, and induction stoves instead of natural gas heating and cooking equipment.

## MODEL INPUTS

Targets for New Building Decarbonization at the corporate scale were developed based on building Energy Use Intensity and percent electrification at individual resorts. Resort targets for Energy Use Intensity by 2030 varied from 157.34 kBtu/sq. ft. to 28kBtu/sq. ft.; the percent electrification for new buildings ranged from 10% to 100%. Factors that influenced resort-level target setting include the type of new buildings planned, local utility incentives, and current and future local building and energy codes.

## IMPACT

### Energy Use Impact in 2030

Constructing efficient, electrified new buildings will reduce natural gas and propane use but increase electricity consumption compared to business-as-usual. The net change in energy use is a 10% reduction in overall energy use from the business-as-usual forecast.

Table 7. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the New Building Decarbonization Big Move.

<b>Buildings Electricity (MWh)</b>	8,241 MWh increase in use due to electrification
<b>Buildings Natural Gas (therms)</b>	65,432 therms reduction
<b>Buildings Propane (gallons)</b>	863,356 gallons reduction

## CO-BENEFITS

 Improved building comfort	 Improved health & safety	 Reduced maintenance costs
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## IMPLEMENTATION FRAMEWORK

### Action Steps

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Develop design criteria for new buildings to guide new construction across all of Boyne Resorts' properties.</li> </ul>	<ul style="list-style-type: none"> <li>Pilot new building design criteria on new construction projects.</li> <li>Revise design criteria as needed for future construction.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to implement new building design criteria on new construction.</li> <li>Periodically update new building design criteria to reflect best practices and technological advancements.</li> </ul>

### Staffing Considerations

- Designate a liaison to design and build teams to ensure efficiency is kept at the forefront of discussions.
- Train maintenance teams on new systems to ensure proper long-term operations.

### Challenges

- Electrification opportunities may be limited for resorts or buildings without reliable electrical infrastructure.

### Opportunities for Local Action

- Maximize the use of state, utility, and local incentives for efficient and electrified new construction.
- Partner with local utilities to explore the potential for innovative demonstration electrification projects.
- Engage guests by highlighting efficiency saving measures and encouraging energy saving behavior.



## **LIFT ENERGY EFFICIENCY**

**Total Annual Emissions Avoided in 2030:**  
37 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
<1% reduction from BAU forecast

**Performance Targets:**  
Electricity Savings by 2030: 240 MWh/year

This Big Move involves improving lift house efficiency and ensuring that any new lifts meet high efficiency standards. An energy audit of lift houses at each resort completed by sustainability teams in 2022 identified many opportunities for energy efficiency improvements. Installing heating controls is one key opportunity for increased lift equipment efficiency. More extensive audits may provide additional opportunities to improve energy efficiency.

### **MODEL INPUTS**

Energy savings estimates from resort lift house audits were used to calculate the resulting carbon emissions reductions. Lift maintenance and operations teams reported that opportunities for improved motor or drive efficiency on lifts are limited as elevation, capacity, and type of lift determine these factors. Therefore, efficiency efforts should focus on lift buildings and motor rooms. As lifts are replaced high efficiency options are explored.

Targets for Lift Energy Efficiency at the corporate scale were developed based on lift improvements identified by resorts for completion before 2030. Savings were calculated based on specific improvements identified at three resorts: The Summit at Snoqualmie, Sunday River, and The Highlands.

### **IMPACT**

#### **Energy Use Impact in 2030**

Improving lift house efficiency will result in reduced electricity use.

Table 9. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the Lift Energy Efficiency Big Move.

**Lift Electricity Use (MWh)** 240 MWh reduction

## CO-BENEFITS

 Improved health & safety	 Reduced maintenance costs
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## IMPLEMENTATION FRAMEWORK

### Action Steps

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>• Inventory lifts at each resort to identify candidates for early upgrades or replacement.</li> <li>• Review results of lift house audits and identify opportunities.</li> <li>• Develop guidelines and/or minimum efficiency standards for any new lifts.</li> </ul>	<ul style="list-style-type: none"> <li>• Install timers and other identified opportunities.</li> <li>• Work with local utilities to identify and apply for any applicable rebates or incentives for the replacement of older lift equipment with higher efficiency models.</li> <li>• Complete efficiency upgrades of older lifts.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to monitor for additional savings opportunities.</li> <li>• Continue to monitor timers to ensure proper settings are maintained.</li> <li>• Install high-efficiency lifts to serve any new terrain.</li> </ul>

### Staffing Considerations

- Time required to identify and complete lift equipment upgrades is significant.
- Train team members on efficient lift operations to maximize the impact of this Big Move.

### Challenges

- Electrical infrastructure issues at some resorts currently mean that backup generation is frequently used to power lifts and other on-mountain equipment. While installing more efficient lift equipment could help reduce on-mountain loads, aligning this Big Move with the Electrical Infrastructure Big Move will be important to ensure that infrastructure is sufficient to support any future growth.

### Opportunities for Local Action

- Some local utilities may offer custom rebates or incentives for upgrading inefficient lift equipment. Partnering with utilities early on could help identify funding opportunities.





# SNOWMAKING ENERGY EFFICIENCY

**Total Annual Emissions Avoided in 2030:**  
979 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
1% reduction from BAU forecast

**Performance Targets:**  
Energy savings by 2030: 13,146 MWh/year

This Big Move involves replacing older snowmaking equipment with high efficiency models, ensuring that any new snowmaking equipment meets high efficiency standards, and implementing best-practices for efficient snowmaking. While efficient snowmaking practices help save both energy and water, our modeling accounts only for emissions and cost savings associated with energy efficiency. This analysis also does not account for the climate resilience benefits of improved snowmaking systems.

## MODEL INPUTS

Modeled energy savings were taken from a Boyne Resorts’ snowmaking study, showing both the difference between keeping constant energy use per acre and estimated energy use of the new equipment for each resort.

## IMPACT

Energy Use Impact in 2030  
Improving snowmaking efficiency will result in reduced electricity use.

Table 10. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the Snowmaking Energy Efficiency Big Move.

<b>Snowmaking electricity use (MWh)</b>	13,146 MWh/year reduction
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## CO-BENEFITS



Improved  
health & safety



Reduced  
maintenance costs



Water efficiency

## IMPLEMENTATION FRAMEWORK

### Action Steps

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Finalize company-wide snowmaking plan.</li> <li>Inventory snowmaking equipment to identify older, inefficient equipment and equipment approaching end-of-life to prioritize for early replacement needs.</li> <li>Establish corporate guidelines for efficient snowmaking, including designation of preferred high-efficiency equipment, and standards for timing and pre-forming slopes/terrain.</li> </ul>	<ul style="list-style-type: none"> <li>Train snowmakers on best practices.</li> <li>Upgrade lowest efficiency/oldest snow guns.</li> </ul>	<ul style="list-style-type: none"> <li>Implement a plan to install high-efficiency equipment exclusively.</li> <li>Identify and complete additional upgrades to existing snowmaking equipment and ensure new purchases meet high-efficiency guidelines.</li> </ul>

### Staffing Considerations

- Time required to identify and complete snowmaking equipment upgrades is significant.
- Train new and returning snowmakers on efficient snowmaking operations to maximize the impact of this Big Move.

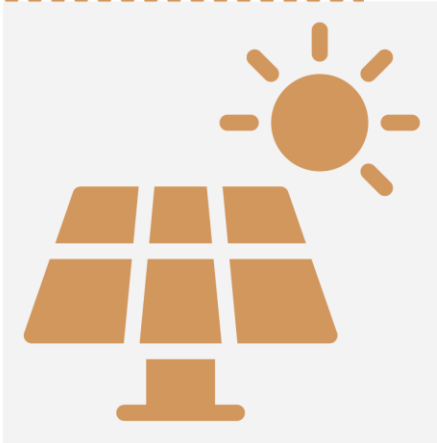
### Challenges

- Electrical infrastructure issues that exist at some resorts force backup generation to be frequently used to power snowmaking and other on-mountain equipment. While installing more efficient snowmaking equipment could help reduce on-mountain loads, aligning this Big Move with the Electrical Infrastructure Big Move is very important and ensures infrastructure can sufficiently support future growth.

### Opportunities for Local Action

- Engage with local utilities to identify availability of custom rebates and incentives that may expedite upgrades/replacements for older, inefficient snowmaking equipment.

## ON-SITE RENEWABLE ENERGY



**Total Annual Emissions Avoided in 2030:**  
4,961 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
7% reduction from Business-As-Usual forecast

**Performance Targets:**  
6.1 MW of on-site solar installed

This Big Move involves installing renewable energy generation capacity such as on-site solar photovoltaic (PV) or wind systems at our resorts. Solar PV could be mounted on the rooftops of new and existing buildings, or ground-mounted on vacant land. Utilities serving each of the properties have different policies and requirements related to on-site renewable generation; therefore, implementation of this Big Move requires a local approach.

### IMPACT

#### Energy Use Impact in 2030

Installation of on-site renewable generation directly impacts energy and fuel usage and also reduces the amount of power purchased from local utilities. On-site generation also creates opportunities for local partnerships and team/guest education.

*Table 11. Boyne Resorts company-wide energy use impact in 2030 as a result of implementing the On-Site Renewable Energy Big Move*

**Electricity generated on-site (MWh)** 7,786 MWh/year reduction

### CO-BENEFITS



Team member  
and guest  
education

## IMPLEMENTATION FRAMEWORK

### Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Identify potential sites for solar PV systems.</li> </ul>	<ul style="list-style-type: none"> <li>Research options for energy generation and associated costs.</li> <li>Engage local utilities to understand feasibility and limitations.</li> <li>Explore potential for battery storage paired with on-site generation to provide backup power and resilience.</li> <li>Explore potential for Virtual Power Purchase Agreement (VPPA) whereby Boyne Resorts retains RECs from generation at one location to meet demand at others.</li> </ul>	<ul style="list-style-type: none"> <li>Install solar PV at viable locations.</li> <li>Explore potential for other forms of on-site renewable generation such as wind and micro hydro.</li> </ul>

### Staffing Considerations

- Time required to identify potential locations for on-site renewable generation and oversee design/construction is significant.
- Time required on an ongoing basis to manage operation and maintenance of on-site renewable generation systems is significant.

### Challenges

- State, local, and utility policies may limit the size and/or feasibility of on-site generation at some properties.
- Grid capacity and infrastructure at some locations may limit the size and/or feasibility of on-site generation at some properties.



### Opportunities for Local Collaboration

- Work with local solar installers to assess potential locations for solar PV, obtain quotes for installation, and install solar at viable sites.
- Engage local utilities to understand location constraints, infrastructure requirements, and any incentives available (e.g., net metering).
- Engage with local community organizations that have clean energy goals and/or provide technical support for solar PV projects.



# EMERGING OPPORTUNITIES

For some of our Big Moves, technology to support full implementation is still emerging. It is critical that we stay up to date on technological advancements, market development, and new funding opportunities to support vehicle and equipment efficiency and electrification.

Big Move		Our Commitment	Contribution to NZE Goal
	<b>Off-Road Equipment Efficiency and Electrification</b>	Improve efficiency of off-road equipment inventory; replace with electric alternatives whenever possible.	2%
	<b>Vehicle Efficiency and Electrification</b>	Improve efficiency of fleet vehicles; replace with electric alternatives whenever possible.	2%

Emerging Opportunities  
 FY 2029-30 Total Big Moves Impact = 66,722 MTCO<sub>2e</sub>

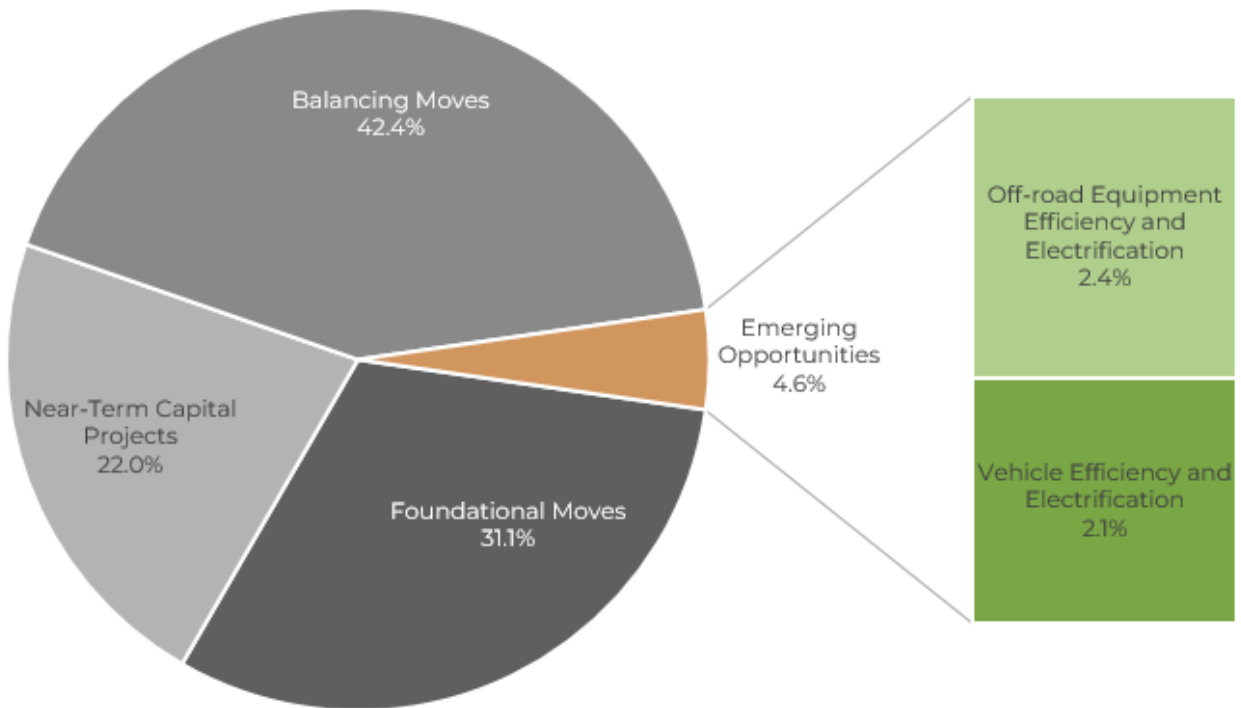
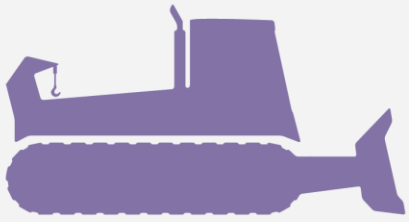


Figure 9. Emerging Opportunities Contribution to Net Zero Goal

## OFF-ROAD EQUIPMENT EFFICIENCY AND ELECTRIFICATION



**Total Annual Emissions Avoided in 2030:**

1,624 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions**

**Goal:** 2% reduction from Business-As-Usual forecast

**Performance Target:**

Reduction of off-road diesel usage: 24%

This Big Move involves replacing off-road equipment with higher efficiency models and/or equipment that runs on electricity. For our modeling efforts, this strategy addresses emissions associated with diesel used by off-road equipment, excluding backup generators. The majority of off-road diesel usage is for grooming equipment. Shown above are fuel savings from transitioning to high-efficiency diesel or hybrid groomers, as well as savings from idle reduction and route optimization.

### MODEL INPUTS

Targets for Off-Road Equipment Efficiency and Electrification at the corporate scale were developed based on targets for reduced usage of off-road diesel at individual resorts. Resort targets for reduced off-road diesel usage by 2030 ranged from 10% to 47%. Factors that influence resort-level target setting include current equipment model availability, existing mix of off-road equipment, and opportunities to consolidate or “right-size” equipment. At the time of plan development, many resorts did not yet have a system in place to accurately track and attribute fuel consumption. Total fuel consumption data is believed to be accurate but cannot be attributed to specific equipment types and some on-road fuel usage may be currently classified as off-road and vice versa. Estimated impact from planned high-efficiency and hybrid groomer upgrades is an 11% fuel savings across the portfolio.

### IMPACT

#### Fuel Usage Impact in 2030

Increasing efficiency of and electrifying off-road equipment will result in reduced diesel usage. However, electrification will also increase electricity consumption.

Table 82. Boyne Resorts energy usage impact in 2030 due to implementing the Off-Road Equipment Efficiency and Electrification Big Move.

**Diesel use (gallons)** 159,105 gallons reduction

## CO-BENEFITS



Improved  
health & safety



Reduced  
maintenance costs

## IMPLEMENTATION FRAMEWORK

### Action Steps

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Inventory off-road equipment.</li> <li>Identify electric off-road equipment currently on the market and opportunities for early replacement.</li> <li>Create an implementation plan to identify which groomers will be replaced with hybrid models per contract.</li> <li>Identify charging needs for electric replacement, infrastructure requirements, and potential locations.</li> </ul>	<ul style="list-style-type: none"> <li>Require fuel usage tracking at all properties detailing attribution by equipment and use type.</li> <li>Explore opportunities to leverage buying power for bulk purchase of electric off-road equipment.</li> <li>Pursue pilots for off-road equipment such as groomers.</li> <li>Install charging equipment required to power off-road equipment.</li> <li>Share best practices for idle reduction and route optimization between resorts.</li> <li>Create an equipment replacement plan identifying targets for electrification.</li> </ul>	<ul style="list-style-type: none"> <li>Implement equipment replacement plan.</li> <li>Pilot emerging off-road equipment technologies.</li> </ul>

### Staffing Considerations

- Train operations teams on hybrid and/or electric equipment maintenance.
- Time required to research existing and emerging electrification technologies and to develop an equipment replacement plan is significant.

### Challenges

- Availability of off-road equipment models that can handle resort needs and rugged terrain.
- Supply chain issues could slow adoption of electric off-road equipment.
- Full electrification of off-road equipment may not be possible without significant advancements in technology.

### Opportunities for Local Collaboration

- Explore and maximize the use of electric equipment rebates available through local utilities or state and federal grant programs.
- Engage with other local and regional fleet operators to share best practices and lessons learned related to off-road equipment electrification.
- Engage local equipment vendors and maintenance providers.

# ON-ROAD VEHICLE EFFICIENCY AND ELECTRIFICATION



**Total Annual Emissions Avoided in 2030:**

1,418 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**

2% reduction from Business-As-Usual Forecast

**Performance Targets:**

1. Gasoline usage reduction by 2030: 67%
2. On-road diesel fuel usage reduction by 2030: 41%

This Big Move involves replacing on-road vehicles, such as passenger cars and trucks, with higher efficiency and/or electric models. This strategy addresses emissions associated with all on-road gasoline and diesel, but does not consider off-road diesel, which is part of the Off-Road Equipment Efficiency and Electrification Big Move.

## MODEL INPUTS

Targets for On-Road Vehicle Efficiency and Electrification at the corporate scale were developed based on targets for reduced gasoline and on-road diesel consumption at each resort. Targets for a reduction in gasoline usage ranged from 0% to 82% and those for diesel ranged from 0% to 100%. Factors influencing resort-level target setting include the existing mix of resort vehicles, current electric vehicle model availability, and opportunities for fleet consolidation or “right-sizing”. At the time of plan development, many resorts did not have a system in place to accurately track and attribute fuel consumption. Though total fuel consumption data is believed to be accurate, it cannot be attributed to specific vehicle types, and some on-road fuel use may be currently classified as off-road and vice versa.

## IMPACT

### Fuel Use Impact in 2030

Increasing the efficiency of and electrifying vehicles will result in reduced diesel and gasoline use. However, electrification will increase electricity consumption.

*Table 93. Boyne Resorts energy use impact in 2030 due to implementing the On-Road Vehicle Efficiency and Electrification Big Move.*

**Electricity Use (MWh)**

1,822 MWh increase due to electrification

<b>Gasoline Use (gallons)</b>	152,097 gallons reduction
<b>Diesel Use (gallons)</b>	28,844 gallons reduction

## CO-BENEFITS



## IMPLEMENTATION FRAMEWORK

### Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Inventory fleet vehicles.</li> <li>Identify opportunities for fleet consolidation or right-sizing.</li> <li>Identify electric vehicles currently on the market and opportunities for early replacement (e.g., passenger vehicles, shuttle busses).</li> <li>Identify charging needs for electric vehicles, infrastructure requirements, and potential locations.</li> </ul>	<ul style="list-style-type: none"> <li>Implement fuel usage tracking to allow for attribution by vehicle and use type across all resorts.</li> <li>Explore opportunities to leverage buying power.</li> <li>Pilot electric vehicles.</li> <li>Install charging infrastructure sufficient to serve pilot vehicles and accommodate future electrification.</li> <li>Create vehicle replacement plans, defining targets for electrification.</li> </ul>	<ul style="list-style-type: none"> <li>Implement vehicle replacement plans.</li> <li>Demo emerging light-, medium-, and heavy-duty electric vehicles.</li> </ul>

### Staffing Considerations

- Train operations teams on electric equipment maintenance.
- Time required to research existing and emerging electrification technologies and develop an equipment replacement plan is significant.

### Challenges

- Limited availability of models that can withstand resort conditions, uses, and rugged terrain.
- Supply chain disruptions could slow adoption of electric vehicles.

### Opportunities for Local Action

- Explore and maximize the use of electric vehicle rebates available through local utilities and state/federal grant programs.
- Engage with local government and state entities that may have developed electric vehicle plans and programs.
- Engage with other local and regional fleet operators, including transit providers, to share best practices and lessons learned related to fleet electrification.
- Engage with local vehicle dealerships and maintenance providers.

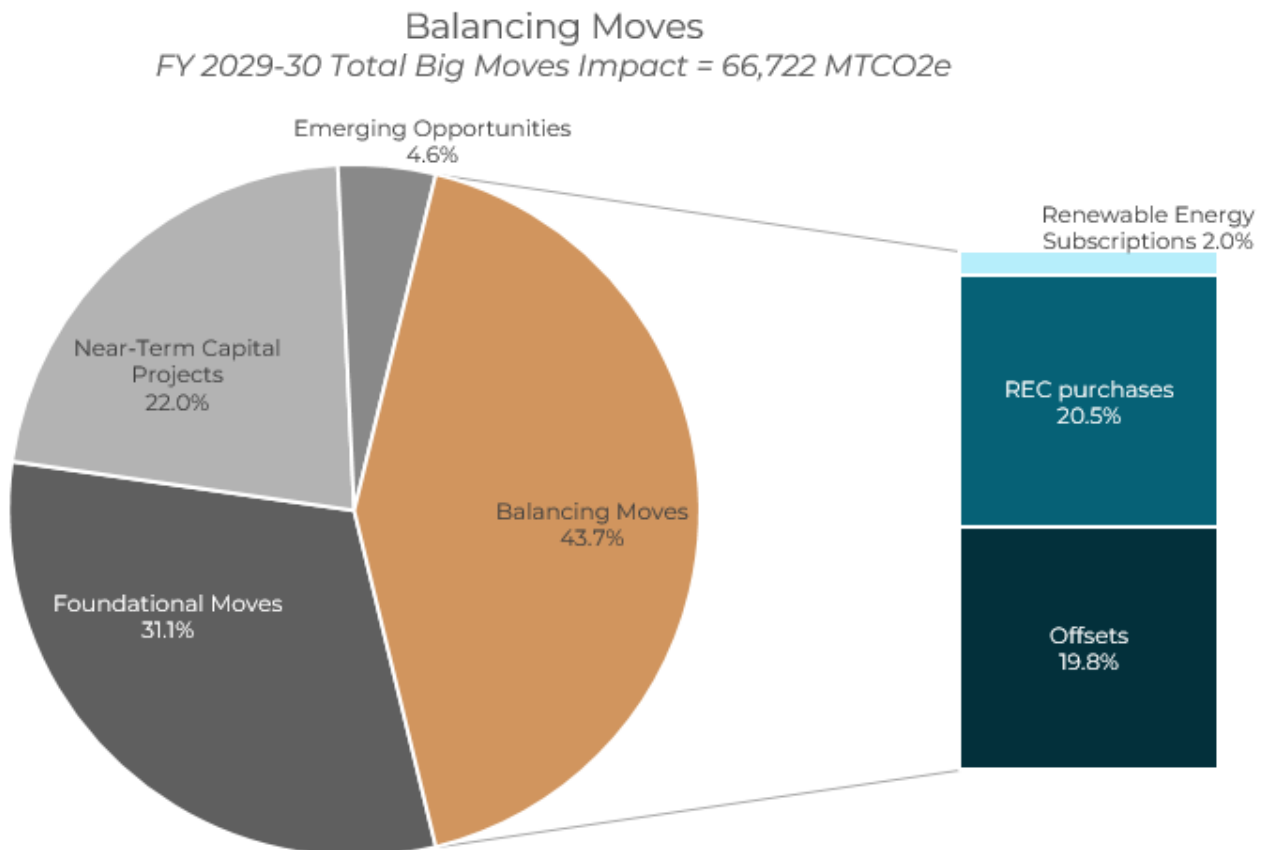


# BALANCING MOVES

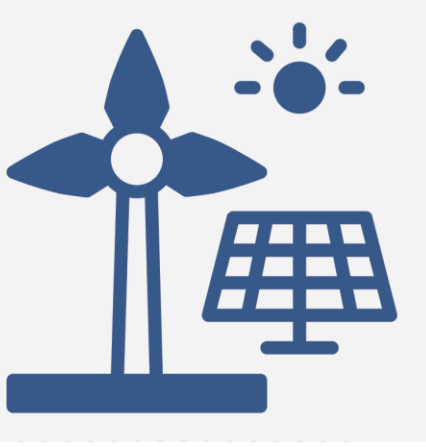
This last group of Big Moves enables Boyne Resorts to bridge the gap to carbon neutrality after maximizing the impact of near-term and emerging capital projects.

Big Move	Our Commitment	Contribution to NZE Goal
 <b>Renewable Energy Subscriptions</b>	Subscribe to local utility renewable energy programs	2%
 <b>Renewable Energy Credit Purchase</b>	Purchase high-quality RECs to account for energy not generated on-site or purchased through local subscription programs	21%
 <b>Offsets</b>	Purchase third-party verified carbon offsets to account for remaining emissions	20%

Figure 10. Balancing Moves Contribution to Net Zero Goal



# RENEWABLE ELECTRICITY SUBSCRIPTIONS



**Total Annual Emissions Avoided in 2030:**  
1,363 MTCO<sub>2e</sub>

**Contribution to Net Zero Emissions Goal:**  
2% reduction from BAU forecast

**Performance Targets:** Total Subscribed  
Electricity: 2,092 MWh per year

Many utilities serving Boyne Resorts offer renewable energy subscription programs. This Big Move involves subscribing to these programs for a portion of or all of resort electricity use. The table below shows the utilities serving each of our resorts, and the renewable energy subscription program(s) currently offered:

Table 14. Renewable Energy Subscription Programs currently available to Boyne Resorts' properties

Utility	Properties Served	Renewable Electricity Subscription Program	Cost Premium
Northwestern Energy	Big Sky Resort	E+ Green	1.25 cents per kWh
Consumers Energy	Boyne Mountain Resort Inn at Bay Harbor	Business Renewable Energy Program	Unknown
		Large Customer Renewable Energy program	Unknown
		Solar Gardens	Unknown
		Michigan Renewable Energy Credit	1.4 cents per kWh
BC Hydro	Cypress Mountain	No known program in Boyne Resorts zip codes	
Constellation	Loon Mountain Resort, Pleasant Mountain, Sugarloaf Resort, Sunday River	No known program in Boyne Resorts' zip codes	
Great Lakes Energy	The Highlands Boyne Mountain Resort	Community Solar	Bill credit
PacifiCorp: Rocky Mountain Power	Brighton Resort	Blue Sky Block/QS	0.7-1.95 cents per kWh
Sevier County Electric (TVA)	Gatlinburg SkyLift Park	Green Switch	1 cent per kWh

Utility	Properties Served	Renewable Electricity Subscription Program	Cost Premium
Central Maine Power	Pleasant Mountain Sugarloaf Resort, Sunday River	Maine Green Power	1.29 cents per kWh
Puget Sound Energy	The Summit at Snoqualmie	Green Power Program	1 cent per kWh

**IMPACT**

Participation in local utility renewable energy subscription programs will not directly impact our energy or fuel usage but will offset emissions associated with electricity used at our properties. This Big Move also creates opportunities for local partnerships to meet our 100% clean electricity commitment.

**IMPLEMENTATION FRAMEWORK**

Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"> <li>Contact utility account representative for local program availability and details.</li> <li>Define renewable energy subscription standards at the corporate scale.</li> </ul>	<ul style="list-style-type: none"> <li>Coordinate subscription purchases and REC purchases (Big Move 10) at the corporate scale.</li> </ul>	<ul style="list-style-type: none"> <li>Annually review subscription level, adjusting to reflect current electricity consumption.</li> </ul>

Staffing Considerations

- Time required to manage Renewable Electricity Subscriptions is minimal.

Challenges

- Not all resorts are served by utilities that offer a local renewable energy subscription program (see Table 14).
- Any required certifications or standards (e.g., Green-e) for local renewable energy subscription programs should be defined at the corporate scale.

Opportunities for Local Action

- This Big Move creates opportunities for partnership with local utilities.



## **RENEWABLE ENERGY CREDIT (REC) PURCHASES**



**Total Annual Emissions Avoided in 2030:**

13,697 MTCO<sub>2e</sub>

**Contribution to Net Zero Emissions Goal:**

21% reduction from baseline

**Performance Targets:**

REC Purchases: 19,359 MWh

Boyne Resorts currently purchases RECs to cover the gap between utility supply and our 100% clean electricity commitment. These RECs are sourced from wind farms in Texas. The RECs purchase allows us to meet our 100% clean electricity commitment, even accounting for resorts and properties without the ability to generate renewable energy on-site or participate in local utility subscription programs.

As we pursue other Big Moves to close the clean energy gap at the resort scale, REC purchases will be dialed up or down to account for changes in electricity usage and utility-supplied energy, as well as resort participation in on-site renewable energy generation or local subscription programs. Boyne Resorts may also consider the viability of transferring RECs between resort properties via a Virtual Power Purchase Agreement.

### **IMPACT**

The purchase of RECs will not directly impact energy or fuel usage but will offset emissions associated with electricity consumed at our resorts.

## IMPLEMENTATION FRAMEWORK

### Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"><li>Establish guidelines for current and future purchase of RECs at the corporate scale.</li></ul>	<ul style="list-style-type: none"><li>Determine remaining clean electricity required; coordinate purchase of RECs at the corporate scale.</li><li>Evaluate alternative REC purchase options, including a Virtual Power Purchase Agreement at the corporate scale.</li></ul>	<ul style="list-style-type: none"><li>Periodically review REC purchases, accounting for local implementation of Big Moves and changes in electricity usage.</li></ul>

### Staffing Considerations

- Time required to manage and update REC contracts is minimal.

### Challenges

- REC costs are expected to increase as market demand increases.
- To avoid the practice or perception of greenwashing, each resort should be able to show that REC investments result in additional clean energy generation.

### Opportunities for Local Action

- This Big Move will be coordinated at the corporate scale.



## OFFSETS



**Total Annual Emissions Avoided in 2030:**  
13,232 MTCO<sub>2</sub>e

**Contribution to Net Zero Emissions Goal:**  
20%

**Performance Targets:**  
Offsets Purchased: 13,232 MTCO<sub>2</sub>e/year to reach net zero

This Big Move involves the purchase of carbon emissions offsets to eliminate any remaining emissions and achieve our net zero emissions goal. We currently partner with [Tradewater](#) to offer guests the opportunity to offset emissions from their trip. Tradewater provides high-quality carbon offset credits associated with the collection and elimination of high impact GHGs such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), refrigerants, and methane.

It is anticipated that offsets will initially be significant, acting as a bridge between our current emissions and net zero goal. However, this Big Move is not deemed a long-term solution and offset purchases will wind down as other Big Moves are implemented.

## IMPACT

This Big Move does not impact energy or fuel use but does create a buffer for the achievement of Boyne Resorts' net zero emissions goal, while new technology is developed to enhance the other Big Moves.

## IMPLEMENTATION FRAMEWORK

### Action Steps and Timeline

Immediate	Short-Term	Medium-Term
<ul style="list-style-type: none"><li>Determine and annually monitor Scope 1 GHG emissions.</li></ul>	<ul style="list-style-type: none"><li>Explore potential for the purchase of offsets to be disaggregated to the resort scale.</li><li>Develop corporate-level guidance for type and quality of offsets to be purchased, including source and third-party verifications.</li></ul>	<ul style="list-style-type: none"><li>Periodically review offset purchases to uphold quality standards.</li><li>Periodically review offset purchases to account for resort-specific and company-wide emissions reductions.</li></ul>

### Staffing Considerations

- Time required for coordination of offset purchases at the local scale is significant.

### Challenges

- Providing consistent guidance for resorts to purchase high-quality offsets is key to maximizing the impact of this Big Move.

### Opportunities for Local Action

- Explore potential for the purchase of offsets to be disaggregated which could allow resorts to work with local partners and have ownership of projects with impact in their region, such as reforestation after a fire or riparian zone restoration to improve the local ecosystem.



# RESORT PROFILES

Our Boyne Resorts ForeverProject Master Plan describes twelve Big Moves to meet our net zero carbon emissions goal by 2030. While this effort requires company-wide planning and action, each resort's attraction, and division is unique, requiring a customized approach. This section of the Master Plan includes resort-specific analysis and dedicated profiles outlining each property's unique pathway to net zero (Figure 11).

These profiles were developed using data provided by each property, input received during planning workshops, and additional context provided through internal surveys.

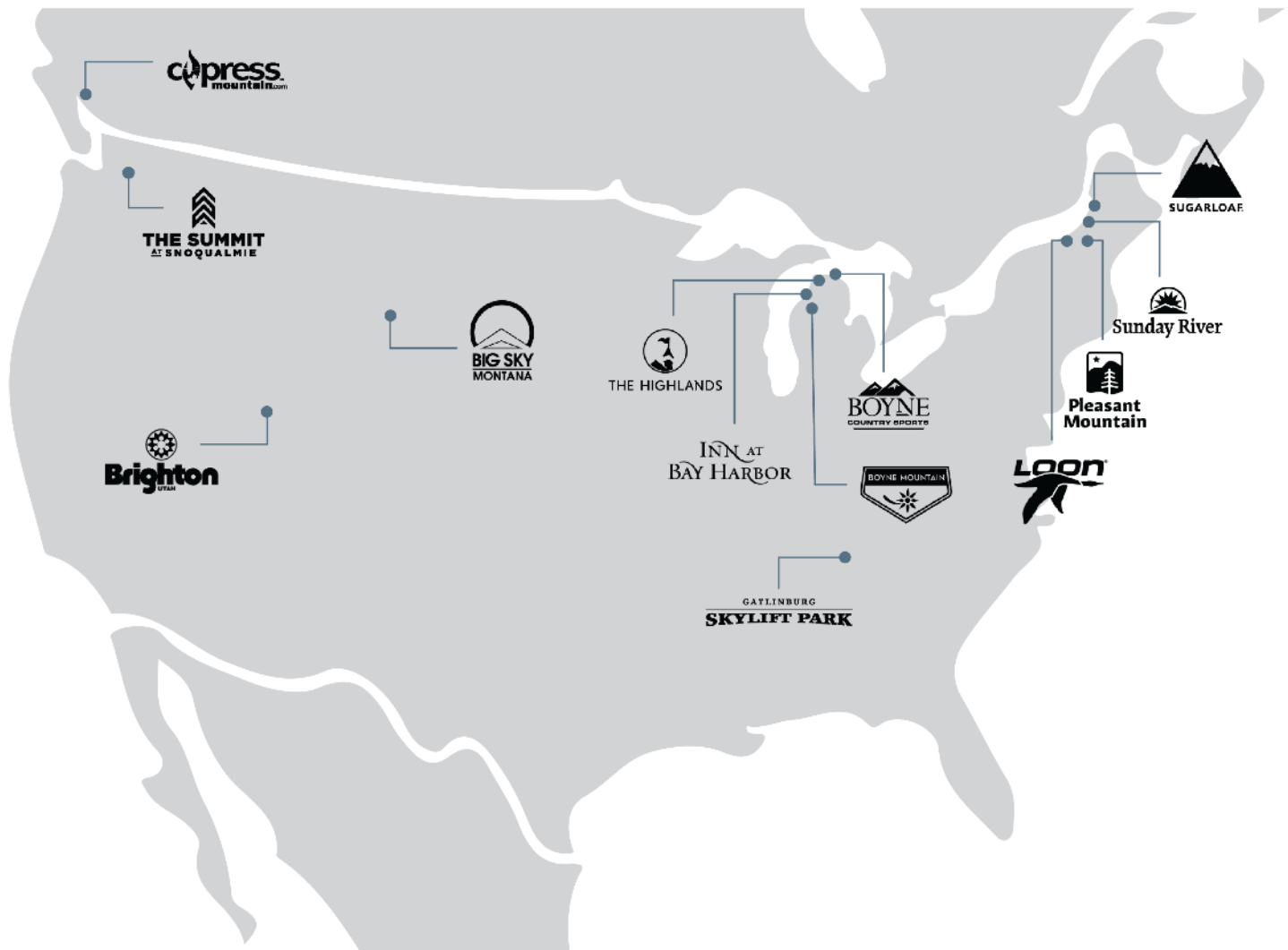
















Figure 11. Boyne Resorts Properties





## NET ZERO EMISSIONS AT EACH BOYNE RESORTS PROPERTY

Due to the unique characteristics of properties, we developed an emissions inventory, a 2030 forecast, and an individual Net Zero Pathway for each one.

Property Name	FY 2020-21 Baseline (% of company-wide total)	FY 2029-30 Forecast (% of company-wide total)	Foundational Moves	Near-Term Capital Projects	Emerging Opportunities	Balancing Moves
 <b>Big Sky Resort</b>	8,449 MTCO <sub>2</sub> e (18%)	20,450 MTCO <sub>2</sub> e (31%)	12%	18%	2%	67%
 <b>Sunday River Resort</b>	8,025 MTCO <sub>2</sub> e (17%)	9,393 MTCO <sub>2</sub> e (14%)	46%	19%	5%	31%
 <b>Boyne Mountain Resort</b>	6,414 MTCO <sub>2</sub> e (14%)	7,074 MTCO <sub>2</sub> e (11%)	40%	29%	1%	31%
 <b>The Highlands</b>	5,789 MTCO <sub>2</sub> e (13%)	7,757 MTCO <sub>2</sub> e (12%)	33%	44%	3%	20%
 <b>Sugarloaf</b>	4,785 MTCO <sub>2</sub> e (10%)	6,097 MTCO <sub>2</sub> e (9%)	42%	21%	9%	29%
 <b>The Summit at Snoqualmie</b>	4,456 MTCO <sub>2</sub> e (10%)	5,310 MTCO <sub>2</sub> e (8%)	51%	18%	5%	26%
 <b>Loon Mountain Resort</b>	3,900 MTCO <sub>2</sub> e (8%)	5,413 MTCO <sub>2</sub> e (8%)	47%	14%	3%	36%
 <b>Brighton Resort</b>	2,013 MTCO <sub>2</sub> e (4%)	2,489 MTCO <sub>2</sub> e (4%)	15%	13%	12%	59%
 <b>Cypress Mountain</b>	1,202 MTCO <sub>2</sub> e (3%)	1,588 MTCO <sub>2</sub> e (2%)	0%	15%	25%	59%
 <b>Pleasant Mountain</b>	1,080 MTCO <sub>2</sub> e (2%)	1,114 MTCO <sub>2</sub> e (2%)	39%	9%	15%	37%
 <b>Gatlinburg SkyLift Park</b>	37 MTCO <sub>2</sub> e (<1%)	37 MTCO <sub>2</sub> e (<1%)	12%	48%	0%	41%
 <b>Inn at Bay Harbor</b>	<i>Data not finalized at time of plan development</i>					
 <b>Boyne Country Sports</b>	<i>Data not finalized at time of plan development</i>					
 <b>Corporate Facilities</b>	<i>Data not finalized at time of plan development</i>					
<b>Total</b>	<b>46,150</b>	<b>66,722</b>	<b>31%</b>	<b>21%</b>	<b>4%</b>	<b>44%</b>



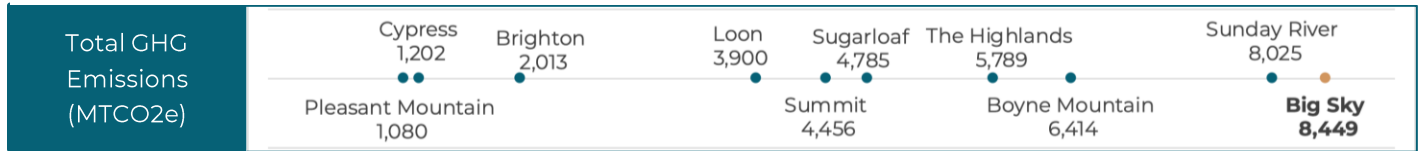
# BIG SKY RESORT

## 2030 NET ZERO EMISSIONS PLAN

Big Sky Resort’s 2030 Net Zero Emissions Plan supports Boyne Resorts’ commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Big Sky Resort, located in Big Sky, Montana.

Big Sky Resort is the largest GHG emitter among Boyne Resorts’ portfolio but is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Big Sky Resort’s journey to net zero emissions including:

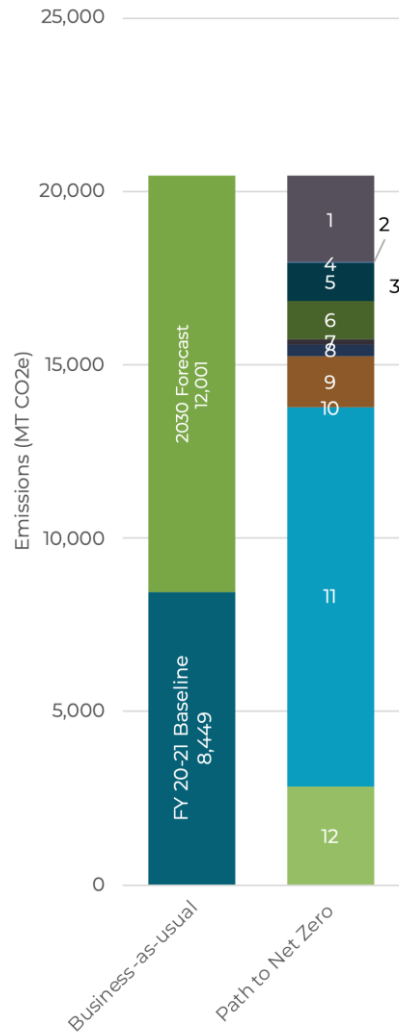
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Big Sky Resort’s journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



### Project Highlights

- Implemented several energy efficiency upgrades during the renovation of Summit Hotel and Huntley Lodge including installation of high-efficiency LED lighting, upgraded HVAC systems with smart controls, thermostats with occupancy sensors, and low-flow water fixtures
- Installed a new all-electric pool dehumidifier with a heat recapture system for exhaust air at Whitewater Inn to replace the propane air handler
- A planned 32kW solar array on the new manager housing project, Levinsky Lodge will produce 39,000 kWh annually

# PATHWAY TO NET ZERO



Big Move		2030 Performance Target	Annual Savings Starting in 2030
1	Utility Clean Energy	✓ Emissions factor: 0.255 MTCO2e/MWh	2,494 MTCO2e (12%)
2	Electrical Infrastructure	✓ 0.1% savings of off-road diesel	3 MTCO2e (<1%)
3	Lift Energy Efficiency	✓ n/a	n/a
4	Snowmaking Energy Efficiency	✓ n/a	n/a
5	Existing Building Decarbonization	✓ 30% energy use reduction ✓ 58% fossil fuel energy use electrified	1,119 MTCO2e (5%)
6	New Building Decarbonization	✓ Average EUI of new buildings: 113 kBtu/sq. ft. ✓ Electrify 85% of typical fossil fuel use	1,103 MTCO2e (5%)
7	Off-Road Equipment Efficiency & Electrification	✓ 15% off-road diesel use reduction	151 MTCO2e (<1%)
8	On-Road Vehicle Efficiency & Electrification	✓ 82% on-road gasoline use reduction ✓ No on-road diesel use	324 MTCO2e (2%)
9	On-Site Renewable Energy Generation	✓ 1.54 MW on-site solar PV	1,489 MTCO2e (7%)
10	Utility Renewable Energy Subscription	✓ No utility subscriptions	n/a
11	REC Purchases	✓ RECs purchased to cover 14,968 MWh of electricity use	10,919 MTCO2e (53%)
12	Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	2,847 (14%)
<b>Total Impact:</b>			<b>20,450 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.



# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Big Sky Resort’s energy use was 103,511 MMBtu in total. The breakout of energy usage by end use is shown below, along with projected energy use if Big Sky Resort continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Montana (6)

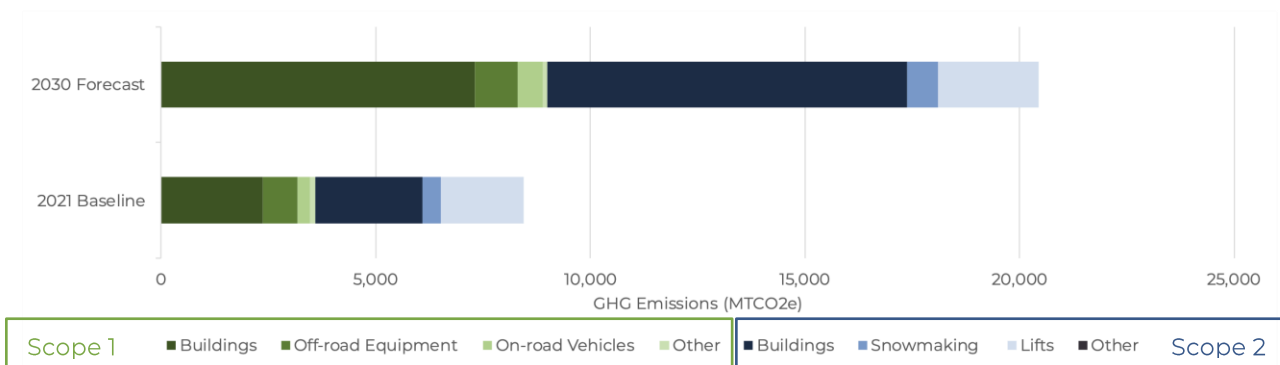
**ELECTRIC UTILITY:** NorthWestern Energy

**NEW BUILDING ENERGY CODE:** IECC 2021

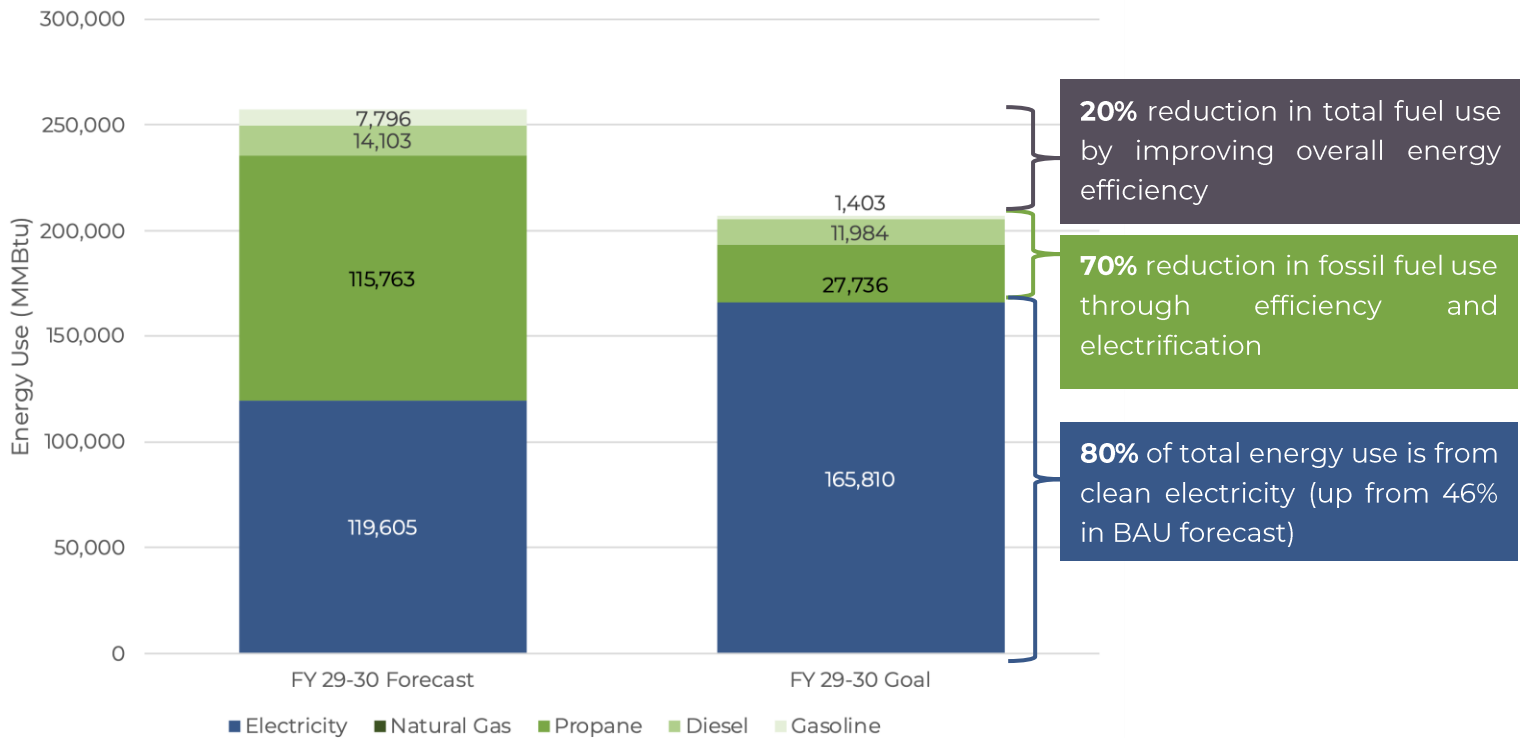
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	412,251 gallons	1,272,119 gallons
	Diesel	Off-Road Equipment	80,377 gallons	99,328 gallons
	Diesel	On-Road Vehicles	1,730 gallons	2,360 gallons
	Gasoline	On-Road Vehicles	30,847 gallons	62,368 gallons
Scope 2	Electricity	Buildings	7,669 MWh	25,665 MWh
	Electricity	Lifts	5,909 MWh	7,169 MWh
	Electricity	Snowmaking	1,297 MWh	2,219 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows current GHG emissions (8,449 MTCO<sub>2</sub>e) at Big Sky Resort by Scope, as well as the projected emissions in 2030 (20,450 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, Big Sky Resort will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Several boilers are approaching end of life, presenting opportunities for electrification
- Opportunity for improvements in efficiency and automation in the Yellowstone Conference Center and Huntley Dining Room
- With homeowners’ associations (HOAs) at hotels, each HOA board of directors must approve any upgrades and efficiency improvements
- Limited to 50kW net metered solar per service address, according to state regulations

## KEY PARTNERS

- Collaborating with [Big Sky Sustainability Network Organization](#) (SNO) on a community Climate Action Plan and ongoing projects related to transportation, waste reduction, building efficiency, green energy, and carbon sequestration
- Completed two stream restoration projects with the Gallatin River Task Force to preserve the Gallatin River along the Big Sky golf course and restore the wetland habitat downstream from Lake Levinsky





## BOYNE COUNTRY SPORTS

### 2030 NET ZERO EMISSIONS: NEXT STEPS

With five city stores, two resort locations, and a warehouse/processing center, Boyne Country Sports operates in Michigan as part of Boyne Resorts’ Retail division. Although utility and fuel use baseline data were not readily available at the time of plan preparation, Boyne Country Sports is still part of Boyne Resorts’ commitment to 100% clean electricity and net zero emissions by 2030.

This section outlines critical next steps that Boyne Country Sports can take to begin tracking progress and developing a Net Zero Emissions Plan.

### KEY BIG MOVES AND METRICS

The following Big Moves have been identified as likely opportunities for carbon emissions reduction. Confirmation should be possible after data collection and analysis.

#### KEY CHARACTERISTICS

**STATE (CLIMATE ZONE):** Michigan

**ELECTRIC UTILITY:** Consumers Energy

Big Moves	Notes	Performance Metrics
<b>Data Collection</b>	Compile utility data to understand the total GHG emissions by source	Complete data collection process development by end of FY 2022-23
<b>Identify Performance Metrics</b>	Review baseline data and identify opportunities to reduce onsite emissions	Create performance metrics by end of FY 2023-24
<b>Existing Building Decarbonization</b>	Leverage data collected to target poorly performing buildings	By 2030, reduce total energy use by 40% and electrify 50% of existing fossil fuel use
<b>Vehicle Efficiency and Electrification</b>	Pilot 2 new electric vehicles	Reduce gasoline and diesel fuel use by 100%
<b>Clean Electricity Procurement</b>	Clean energy gap for consumers is expected to be about 63% in 2030	Target generating 10% of clean electricity needs on site, procuring 70% from utility subscription programs, cover 20% through REC purchases





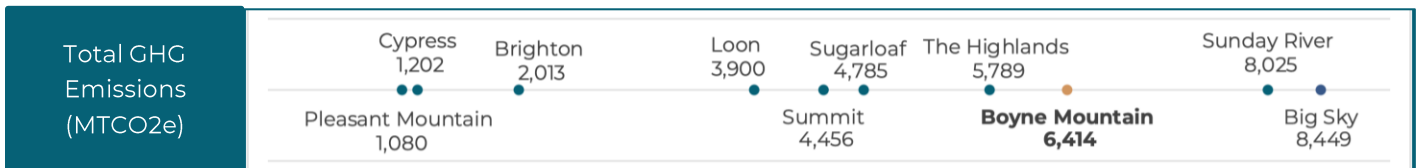
# BOYNE MOUNTAIN RESORT

## 2030 NET ZERO EMISSIONS PLAN

Boyne Mountain Resort’s 2030 Net Zero Emissions Plan supports Boyne Resorts’ commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Boyne Mountain Resort, located in Boyne Falls, Michigan.

Boyne Mountain Resort has the 3<sup>rd</sup> highest GHG emissions among Boyne Resorts portfolio and is above its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Boyne Mountain Resort’s journey to net zero emissions including:

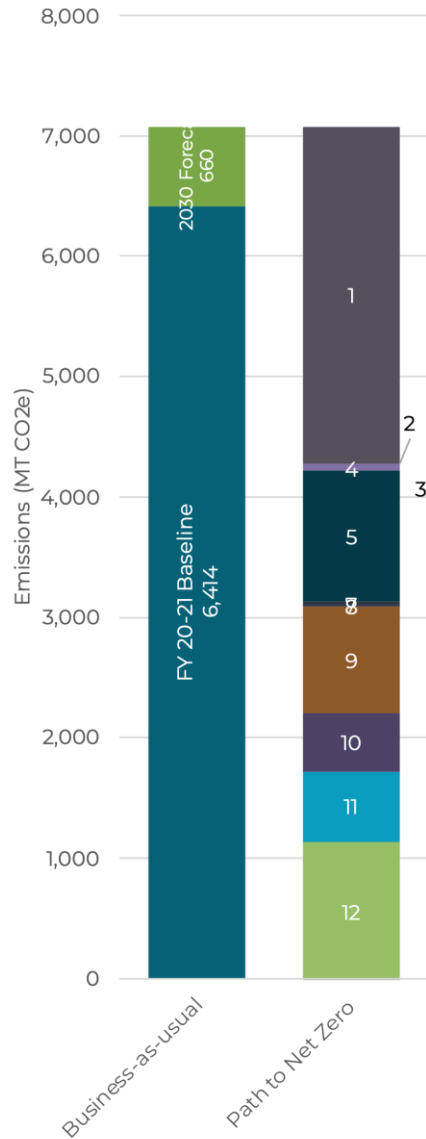
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Boyne Mountain Resort’s journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Partnered with CMS Energy and Consumers Energy on construction of a 1.5 MW solar array on Boyne Mountain Resort property
- Implemented several updates to boost energy efficiency in laundry building, including replacement of three dryers with a single large dryer, installing a motion sensor lighting system, and updating washers
- Replaced a portion of slope lighting with energy-efficient LEDs

# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.235 MTCO2e/MWh	2,801 MTCO2e (40%)
2 Electrical Infrastructure	✓ n/a	n/a
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ 252 MWh savings	59 MTCO2e (1%)
5 Existing Building Decarbonization	✓ 40% energy use reduction ✓ 30% fossil fuel energy use electrified	1,088 MTCO2e (15%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 120 kBtu/sq. ft. ✓ Electrify 80% of typical fossil fuel use	Negligible emissions impact
7 Off-Road Equipment Efficiency & Electrification	✓ 10% off-road diesel use reduction	17 MTCO2e (<1%)
8 On-Road Vehicle Efficiency & Electrification	✓ 80% on-road diesel use reduction	23 MTCO2e (<1%)
9 On-Site Renewable Energy Generation	✓ 1.87 MW on-site solar PV	879 MTCO2e (12%)
10 Utility Renewable Energy Subscription	✓ 1,309 MWh subscribed through utility program	488 MTCO2e (7%)
11 REC Purchases	✓ RECs purchased to cover 1,571 MWh of electricity use	586 MTCO2e (8%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,135 (16%)
<b>Total Impact:</b>		<b>7,074 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.



# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Boyne Mountain Resort’s energy use was 60,080 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Boyne Mountain Resort continues business as usual.

## KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Michigan (6)

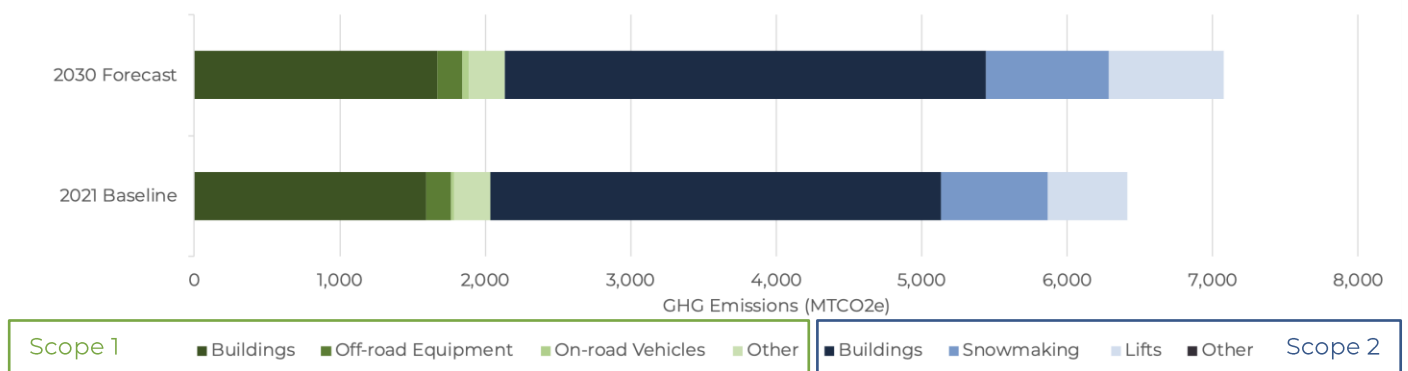
**ELECTRIC UTILITY:** Consumers Energy and Great Lakes Energy

**NEW BUILDING ENERGY CODE:** IECC 2015

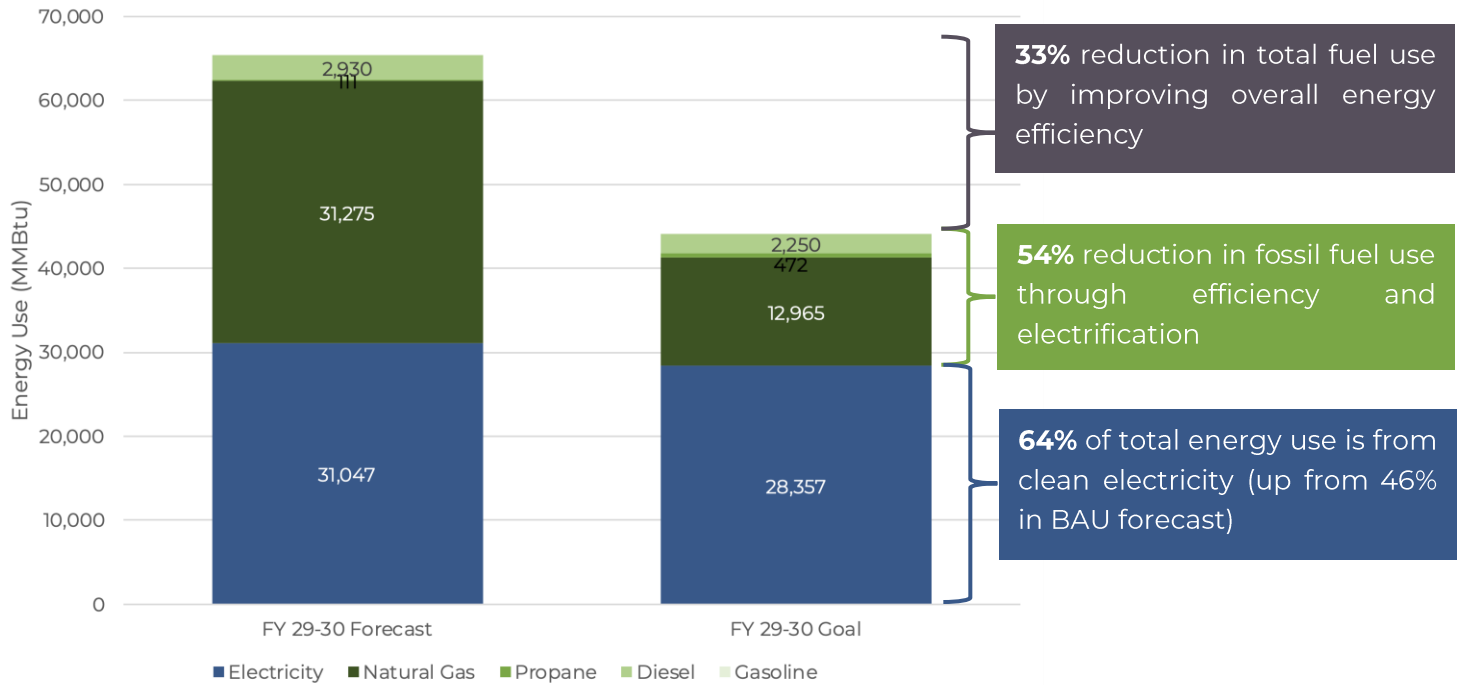
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	298,342 therms	312,748 therms
	Propane	Buildings	1,022 gallons	1,222 gallons
	Diesel	Off-Road Equipment	17,138 gallons	17,138 gallons
	Diesel	On-Road Vehicles	1,786 gallons	3,985 gallons
	Gasoline	On-Road Vehicles	0 gallons	0 gallons
Scope 2	Electricity	Buildings	5,705 MWh	6,088 MWh
	Electricity	Lifts	1,005 MWh	1,448 MWh
	Electricity	Snowmaking	1,359 MWh	1,564 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (6,414 MTCO<sub>2</sub>e) at Boyne Mountain Resort by Scope, as well as the projected emissions in 2030 (7,074 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, Boyne Mountain Resort will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Over the next 8 years, at least 25% of Boyne Mountain’s boilers will need replacing; majority of fossil fuel use in existing buildings is for boilers and heaters so replacement provides opportunity for electrification
- Land availability provides an opportunity to expand existing solar PV infrastructure
- On-site hydroelectric dam currently generates 8% of the resort’s power; facility improvements currently underway to boost reliability and future automation may increase power generation
- Electrical outages are rare and quickly resolved when occurring, making electrification a viable alternative to fossil fuels

## KEY PARTNERS

- Partnered with CMS Energy and Consumers Energy to plant a pollinator garden under the new Solar PV installation using native species
- Hosted a fundraiser for Tip of the Mitt Watershed Council, a non-profit dedicated to protecting lakes, streams, wetlands, and groundwater throughout the Great Lakes Basin





**FOREVER  
PROJECT**



**BUILDING A SUSTAINABLE TOMORROW**



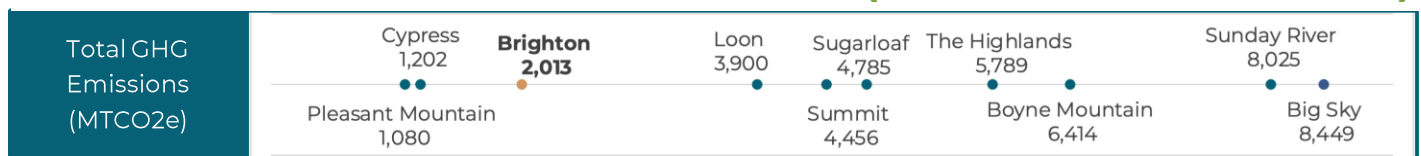
## BRIGHTON RESORT

### 2030 NET ZERO EMISSIONS PLAN

Brighton Resort's 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Brighton Resort, located near Salt Lake City, Utah.

Brighton Resort ranks 3<sup>rd</sup> lowest for GHG emissions among Boyne Resorts' portfolio and is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



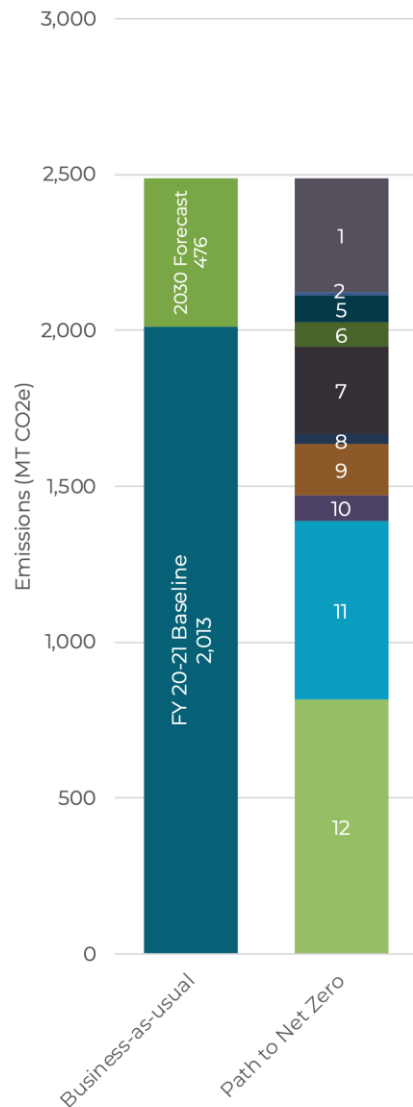
This plan provides the specifics of Brighton Resort's journey to net zero emissions including:

- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Brighton Resort's journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Retrofitted most building lights with LEDs
- Reduced diesel fuel usage by replacing heavy equipment with hybrid-diesel models and tracking snowcat movement to reduce idling and improve grooming efficiency
- Planted 300 Aspen saplings in the resort's Children's Forest with the participation of students attending Brighton Summer Camp



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.222 MTCO2e/MWh	366 MTCO2e (15%)
2 Electrical Infrastructure	✓ 2.4% savings of off-road diesel	13 MTCO2e (0.5%)
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ n/a	n/a
5 Existing Building Decarbonization	✓ 10% energy use reduction ✓ 30% fossil fuel energy use electrified	84 MTCO2e (3%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 157.34 kBtu/sq. ft. ✓ 40% of fuel use from electricity	80 MTCO2e (3%)
7 Off-Road Equipment Efficiency & Electrification	✓ 40% off-road diesel use reduction	278 MTCO2e (11%)
8 On-Road Vehicle Efficiency & Electrification	✓ 40% on-road gasoline use reduction ✓ 60% on-road diesel use reduction	33 MTCO2e (1%)
9 On-Site Renewable Energy Generation	✓ 0.306 MW on-site solar PV	164 MTCO2e (7%)
10 Utility Renewable Energy Subscription	✓ 10% of electricity use subscribed through utility (230 MWh)	82 MTCO2e (3%)
11 REC Purchases	✓ RECs purchased to cover 70% of electricity use (1,607 MWh)	576 MTCO2e (23%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	814 MTCO2e (33%)
<b>Total Impact:</b>		<b>2,489 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.



# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is used on site. In FY 2020-21, Brighton Resort’s energy use was 24,938 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Brighton Resort continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Utah (6)

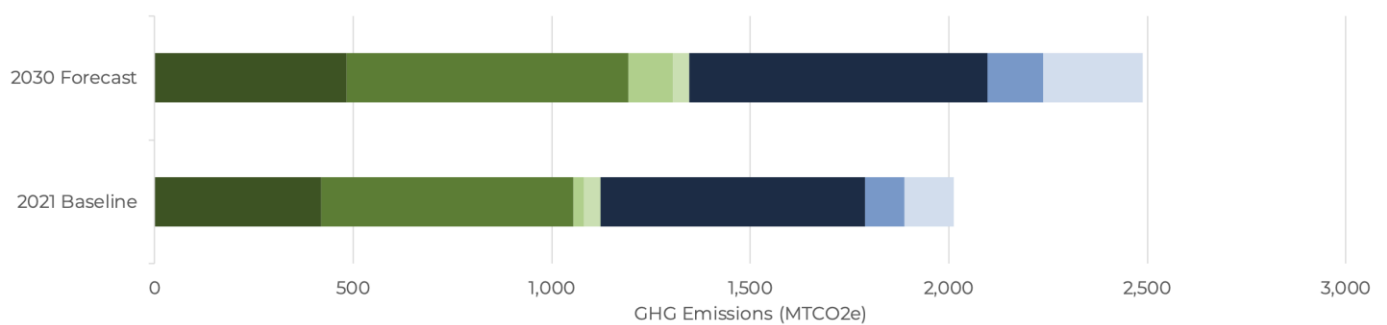
**ELECTRIC UTILITY:** Rocky Mountain Power

**NEW BUILDING ENERGY CODE:** IECC 2018

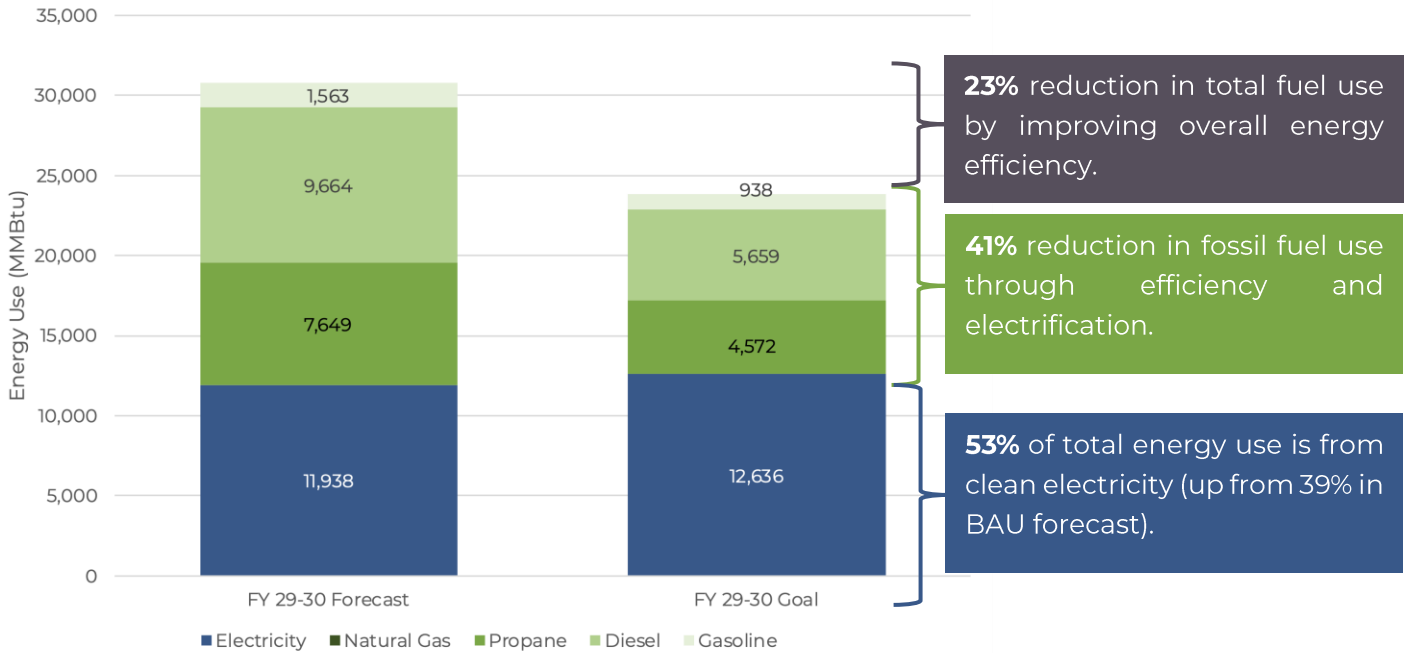
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	73,166 gallons	84,059 gallons
	Diesel	Off-Road Equipment	62,222 gallons	69,678 gallons
	Diesel	On-Road Vehicles	0 gallons	0 gallons
	Gasoline	On-Road Vehicles	2,859 gallons	12,504 gallons
Scope 2	Electricity	Buildings	2,039 MWh	2,299 MWh
	Electricity	Lifts	379 MWh	769 MWh
	Electricity	Snowmaking	306 MWh	431 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (2,013 MTCO<sub>2</sub>e) at Brighton Resort by Scope, as well as the projected emissions in 2030 (2,489 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, Brighton Resort will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Several boilers are nearing end of life and can be replaced with more efficient and electric models
- No access to natural gas currently requires costly use of propane and should make the transition to 100% building electrification easier and more impactful

## KEY PARTNERS

- Rescued and relocated 266 tree saplings from ski runs near Snake Creek Lift in partnership with Tree Utah
- Host hiking and skiing with a certified arborist, planting wildflowers and fixing up the Mary Lake Trail with volunteers from Cottonwood Canyons Foundation





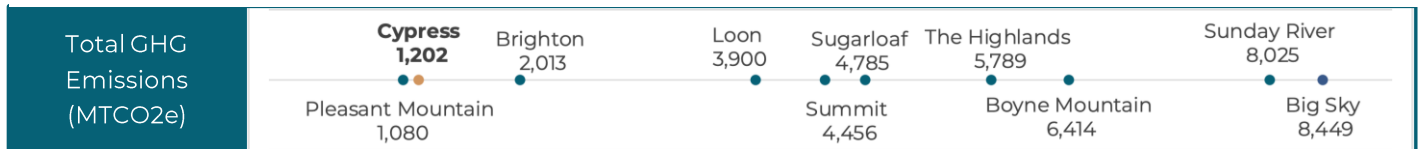
# CYPRESS MOUNTAIN

## 2030 NET ZERO EMISSIONS PLAN

Cypress Mountain’s 2030 Net Zero Emissions Plan supports Boyne Resorts’ commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Cypress Mountain, located in West Vancouver, British Columbia.

Cypress Mountain ranks 2<sup>nd</sup> lowest for GHG emissions among Boyne Resorts’ portfolio and is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Cypress Mountain’s journey to net zero emissions including:

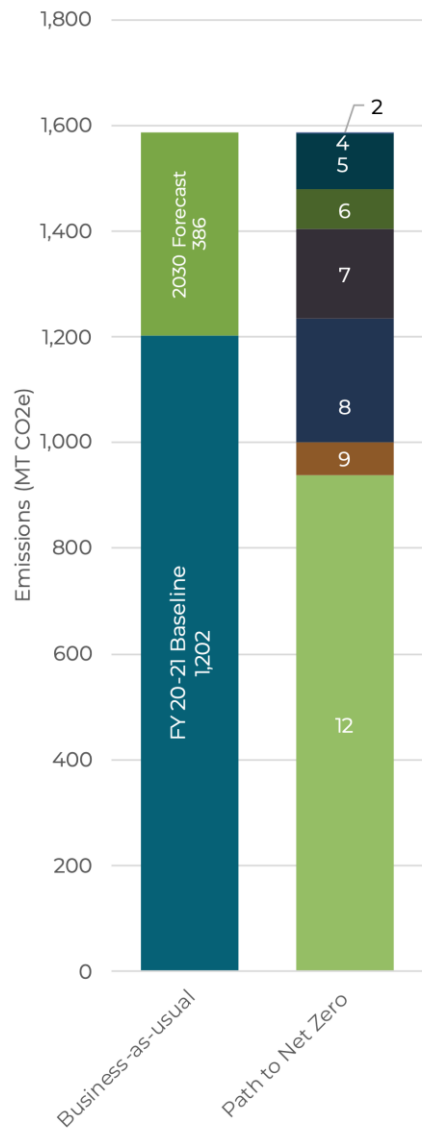
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Cypress Mountain’s journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Upgraded 95% of Cypress Mountain lighting to LEDs, including night skiing lighting, all lift buildings, and lodges
- Installed electric vehicle charging stations and offer free shuttle bus transportation for team members
- Replaced main lodge hot water tanks with more efficient models

# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Maintain current emissions factor: 0.010 MTCO2e/MWh	0 MTCO2e
2 Electrical Infrastructure	✓ 0.3% savings of off-road diesel	2 MTCO2e (<1%)
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ n/a	2 MTCO2e (<1%)
5 Existing Building Decarbonization	✓ 10% energy use reduction ✓ 30% fossil fuel energy use electrified	104 MTCO2e (7%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 157.34 kBtu/sq. ft. ✓ Electrify 80% of typical fuel use	76 MTCO2e (5%)
7 Off-Road Equipment Efficiency & Electrification	✓ 25% off-road diesel use reduction	169 MTCO2e (11%)
8 On-Road Vehicle Efficiency & Electrification	✓ 75% on-road gasoline use reduction ✓ 25% on-road diesel use reduction	234 MTCO2e (15%)
9 On-Site Renewable Energy Generation	✓ 63 kW on-site solar PV	63 MTCO2e (4%)
10 Utility Renewable Energy Subscription	✓ n/a	n/a
11 REC Purchases	✓ n/a	n/a
12 Offset Purchases	✓ Purchase offsets to cover remaining scope 1 emissions	938 MTCO2e (59%)
<b>Total Impact:</b>		<b>1,588 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.





# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels on-site to heat buildings and fuel vehicles, and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Cypress Mountain’s energy use was 31,737 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Cypress Mountain continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** British Columbia, CA (5)

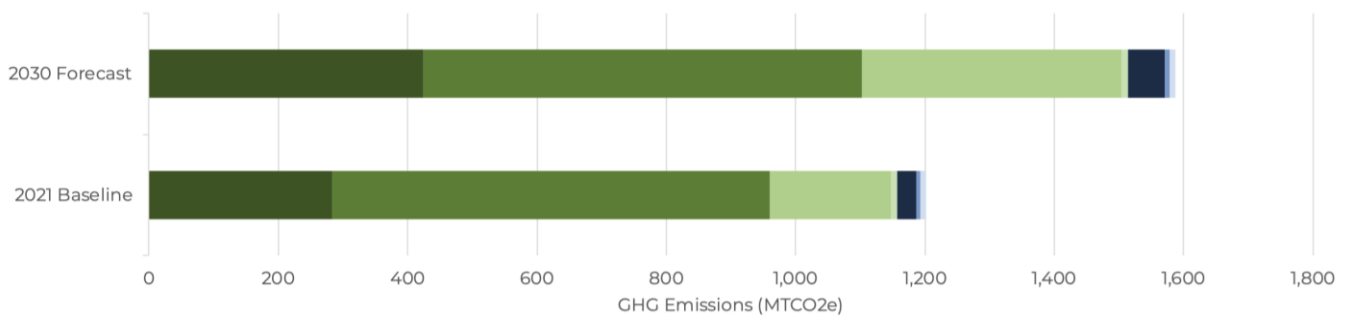
**ELECTRIC UTILITY:** BC Hydro

**NEW BUILDING ENERGY CODE:** BC Energy Step Code

	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	49,240 gallons	74,010 gallons
	Diesel	Off-Road Equipment	66,394 gallons	66,394 gallons
	Diesel	On-Road Vehicles	12,789 gallons	12,696 gallons
	Gasoline	On-Road Vehicles	6,374 gallons	30,991 gallons
Scope 2	Electricity	Buildings	3,034 MWh	5,686 MWh
	Electricity	Lifts	878MWh	884 MWh
	Electricity	Snowmaking	624 MWh	790 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (1,202 MTCO2e) at Cypress Mountain by Scope, as well as the projected emissions in 2030 (1,588 MTCO2e) if no steps are taken to mitigate emissions.

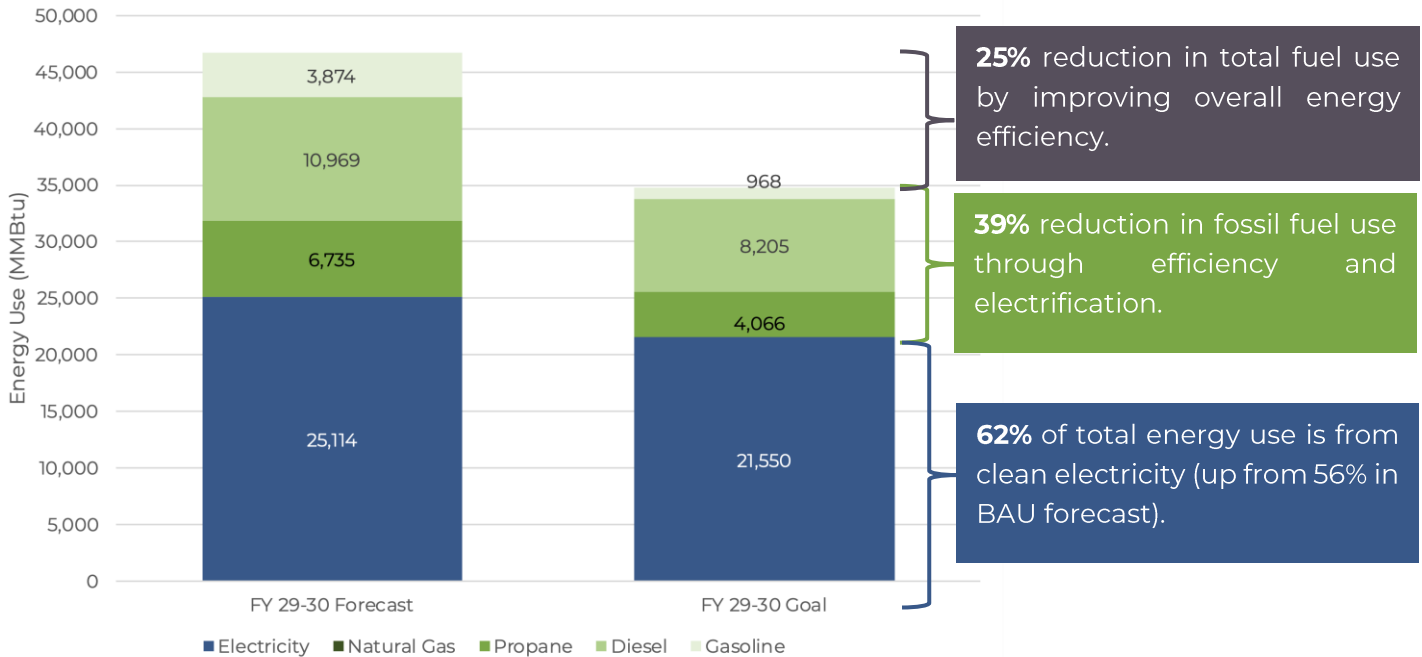


Scope 1 ■ Buildings ■ Off-road Equipment ■ On-road Vehicles ■ Other ■ Buildings ■ Snowmaking ■ Lifts ■ Other Scope 2



# ENERGY SYSTEM TRANSFORMATION

To reach net zero by 2030, Cypress Mountain will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- 97% of electricity serving Cypress Mountain is clean hydro power, providing a clean energy source for electrifying more equipment around the mountain
- Majority of GHG emissions come from Scope 1, requiring a focus on fuel reduction with current technology possibly being a limiting factor to significant emissions reductions in this area
- Opportunity to generate carbon credits with public and fleet EV charging stations around the mountain through a local NGO and government programs

## KEY PARTNERS

- Joined the new Canadian chapter of Protect Our Winters as a founding member, helping to increase advocacy efforts in Canada both provincially and nationally
- Collaborate with NGOs such as The Friends of Cypress and The Pacific Streamkeepers Federation to ensure protection of sensitive ecosystems and wildlife populations within the area managed by the resort





## GATLINBURG SKYLIFT PARK 2030 NET ZERO EMISSIONS PLAN

Gatlinburg SkyLift Park's 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. This plan is based on specific conditions and opportunities at Gatlinburg SkyLift Park. Operations at this attraction in Gatlinburg, Tennessee are significantly different from those at ski resorts; therefore, a comparison of emissions to other Boyne Resorts properties is not meaningful.

### EMISSIONS QUICK REFERENCE (FY 2020-21 BASELINE)

Total Emissions:  
37 MTCO<sub>2</sub>e

<1% of Total Boyne  
Resorts Emissions

This plan provides the specifics of Gatlinburg SkyLift Park's journey to net zero emissions including:

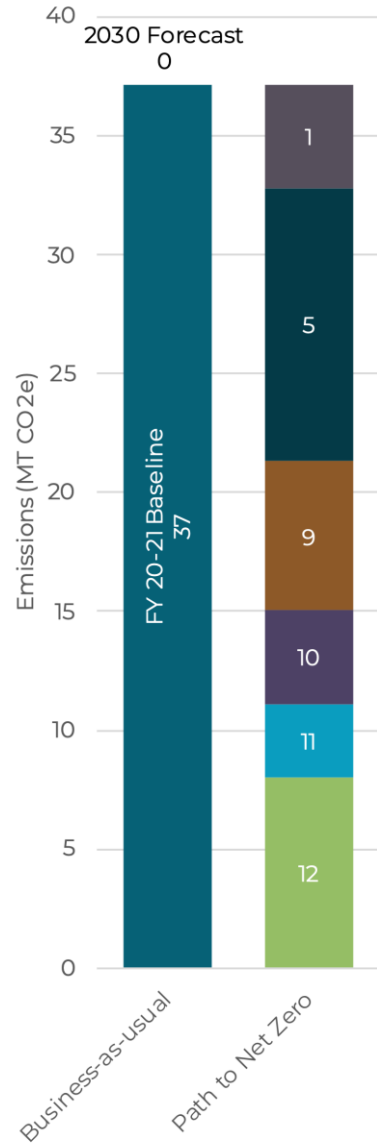
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Gatlinburg SkyLift Park's journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities and project highlights



#### Project Highlights

- Purchased two electric golf carts to transport staff from parking area to the temporary operations building
- Equipped all temporary structures used for day-to-day operations with LED bulbs and motion sensors

# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.181 MTCO <sub>2</sub> e/MWh	4 MTCO <sub>2</sub> e (12%)
2 Electrical Infrastructure	✓ n/a	n/a
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ n/a	n/a
5 Existing Building Decarbonization	✓ 40% energy use reduction ✓ 40% fossil fuel energy use electrified	11 MTCO <sub>2</sub> e (31%)
6 New Building Decarbonization	✓ n/a	n/a
7 Off-Road Equipment Efficiency & Electrification	✓ n/a	n/a
8 On-Road Vehicle Efficiency & Electrification	✓ n/a	n/a
9 On-Site Renewable Energy Generation	✓ 0.008 MW on-site solar PV	6 MTCO <sub>2</sub> e (17%)
10 Utility Renewable Energy Subscription	✓ 7 MWh of electricity use subscribed through utility	4 MTCO <sub>2</sub> e (11%)
11 REC Purchases	✓ RECs purchased to cover 5 MWh of electricity use	3 MTCO <sub>2</sub> e (8%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	8 MTCO <sub>2</sub> e (22%)
<b>Total Impact:</b>		<b>37 MTCO<sub>2</sub>e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.



# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Gatlinburg SkyLift Park’s energy use was 584 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Gatlinburg SkyLift Park continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Tennessee (4)

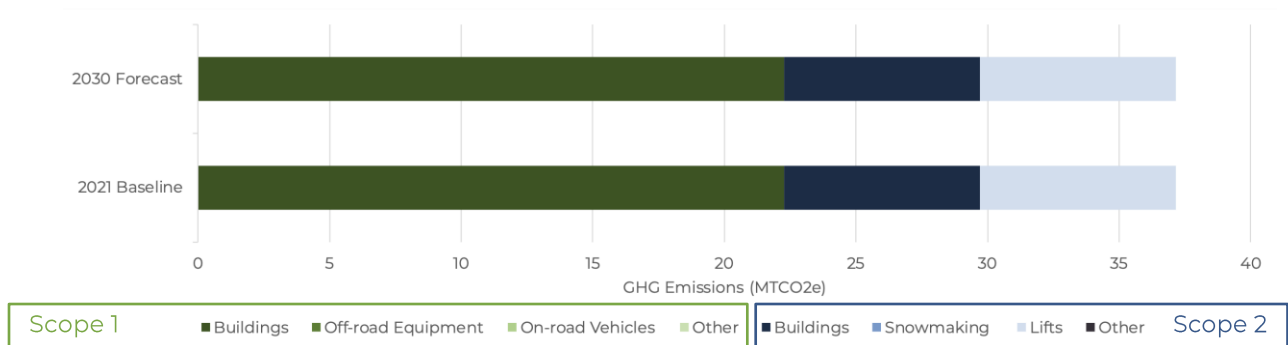
**ELECTRIC UTILITY:** Sevier County Electric

**NEW BUILDING ENERGY CODE:** IECC 2012

	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	2,003 therms	Projection TBD
	Propane	Buildings	2,027 gallons	Projection TBD
	Diesel	Off-Road Equipment	0 gallons	n/a
	Diesel	On-Road Vehicles	0 gallons	n/a
	Gasoline	On-Road Vehicles	0 gallons	n/a
Scope 2	Electricity	Buildings	29 MWh	Projection TBD
	Electricity	Lifts	29 MWh	Projection TBD

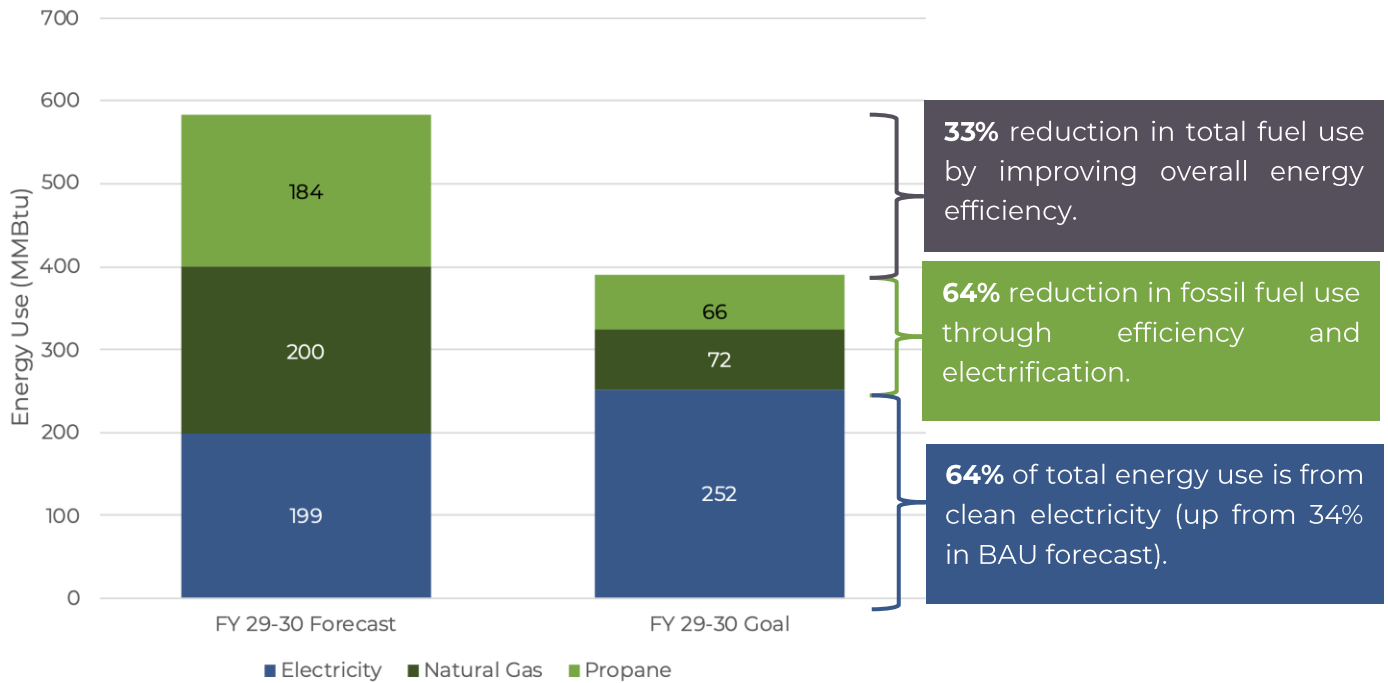
# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (37 MTCO2e) at Gatlinburg SkyLift Park by Scope. The projected emissions are assumed to equal current emissions in 2030 if no steps are taken to mitigate emissions.



# ENERGY SYSTEM TRANSFORMATION

To reach net zero by 2030, Gatlinburg SkyLift Park will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:





## INN AT BAY HARBOR

### 2030 NET ZERO EMISSIONS: NEXT STEPS

Inn at Bay Harbor is on the Lake Michigan shoreline and not a ski resort, but still part of Boyne Resorts' commitment to 100% clean electricity and net zero emissions by 2030. Utility and fuel use baseline data were not readily available at the time of plan preparation. However, this section outlines critical next steps that Inn at Bay Harbor can take to begin tracking progress and developing a Net Zero Emissions Plan.

### KEY BIG MOVES AND METRICS

The following Big Moves have been identified as likely opportunities for carbon emissions reduction. Confirmation should be possible after data collection and analysis.

#### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Michigan (6)

**ELECTRIC UTILITY:** Consumers Energy

**NEW BUILDING ENERGY CODE:** IECC 2015

Big Moves	Notes	Performance Metrics
<b>Data Collection</b>	Compile utility data to understand total GHG emissions by source	Complete data collection process development by end of FY 2022-23
<b>Existing Building Decarbonization</b>	Leverage data collected to target poorly performing buildings	By 2030, reduce total energy use by 30% and electrify 50% of existing fossil fuel use
<b>New Building Decarbonization</b>	At least 1 new facility planned	Target EUI of 90 kBtu with 70% electrification of typical fossil fuel use
<b>Vehicle Efficiency and Electrification</b>	Pilot 1 new electric vehicle	Reduce gasoline fuel use by 20%
<b>Clean Electricity Procurement</b>	Clean energy gap for consumers is expected to be about 63% in 2030	Target procuring 40% of clean energy needs from utility subscription programs and 60% through REC purchases



#### Project Highlights

- Converted most lighting to LEDs and is working to install high efficiency equipment where possible
- Reduced fuel consumption by 500 gallons per year in golf operations by decreasing the frequency of fairway mowing to twice per week during the golf season



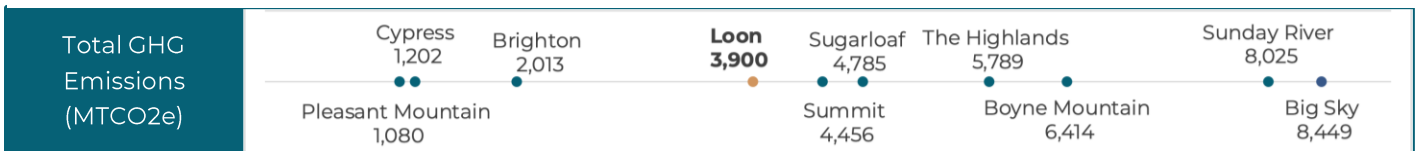
# LOON MOUNTAIN RESORT

## 2030 NET ZERO EMISSIONS PLAN

Loon Mountain Resort’s 2030 Net Zero Emissions Plan supports Boyne Resorts’ commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Loon Mountain Resort, located in Lincoln, New Hampshire.

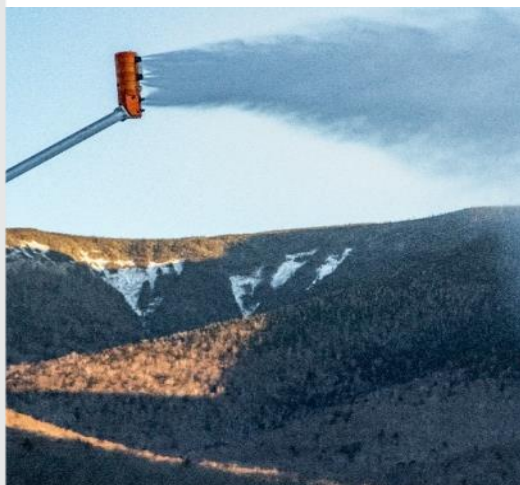
Loon Mountain Resort ranks 4<sup>th</sup> lowest for GHG emissions among Boyne Resorts’ portfolio and is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Loon Mountain’s journey to net zero emissions including:

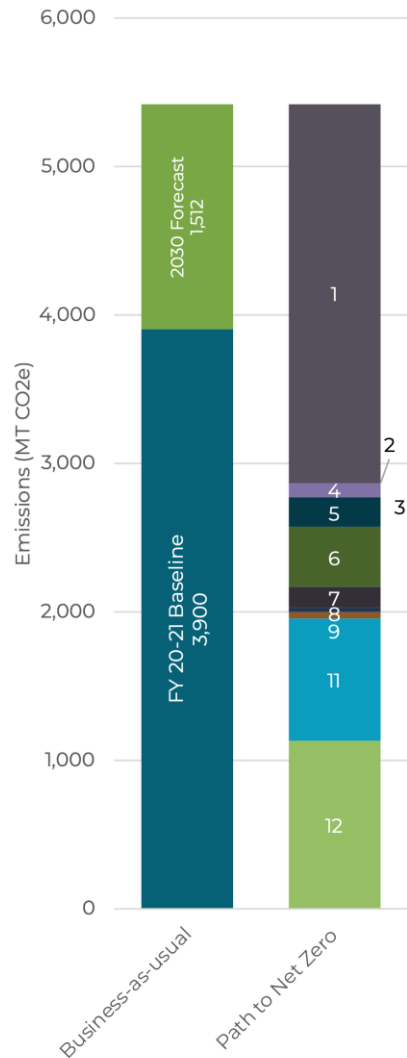
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Loon Mountain Resort’s journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Improved snowmaking efficiencies with the installation of fully automated fan guns and 22 semi-automated hydrants
- Purchased a Polaris Ranger EV UH53, replacing a gasoline-fueled Ranger, to pilot the effectiveness of electrifying on-hill work vehicles
- Installed larger, more efficient windows in the Octagon Lodge solarium, reducing heating energy required by allowing more sunlight in and reducing heat loss





Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.062 MTCO2e/MWh	2,545 MTCO2e (47%)
2 Electrical Infrastructure	✓ 0.1% savings of off-road diesel	0.5 MTCO2e (<1%)
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ 1,602 MWh savings	100 MTCO2e (2%)
5 Existing Building Decarbonization	✓ 30% energy use reduction ✓ 20% fossil fuel energy use electrified	198 MTCO2e (4%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 100 kBtu/sq. ft. ✓ Electrify 70% of typical fossil fuel use	407 MTCO2e (8%)
7 Off-Road Equipment Efficiency & Electrification	✓ 20% off-road diesel use reduction	134 MTCO2e (2%)
8 On-Road Vehicle Efficiency & Electrification	✓ 80% on-road gasoline use reduction ✓ 30% on-road diesel use reduction	33 MTCO2e (0.6%)
9 On-Site Renewable Energy Generation	✓ 29 kW on-site solar PV	43 MTCO2e (0.8%)
10 Utility Renewable Energy Subscription	✓ n/a	n/a
11 REC Purchases	✓ RECs purchased to cover 662 of electricity use	826 MTCO2e (15%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,127 (21%)
<b>Total Impact:</b>		<b>5,413 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.



## ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Loon Mountain Resort’s energy use was 54,537 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Loon Mountain Resort continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** New Hampshire (6)

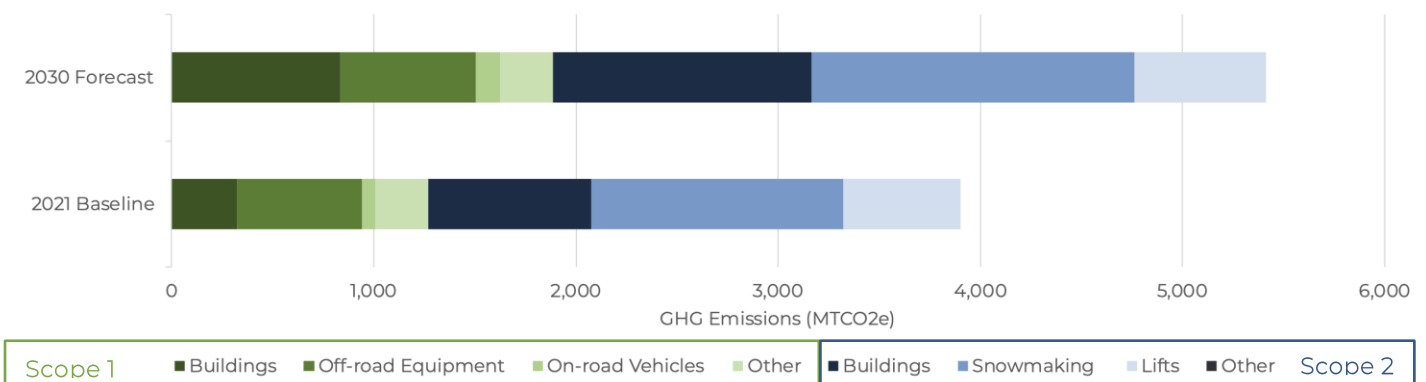
**ELECTRIC UTILITY:** Constellation

**NEW BUILDING ENERGY CODE:** IECC 2015

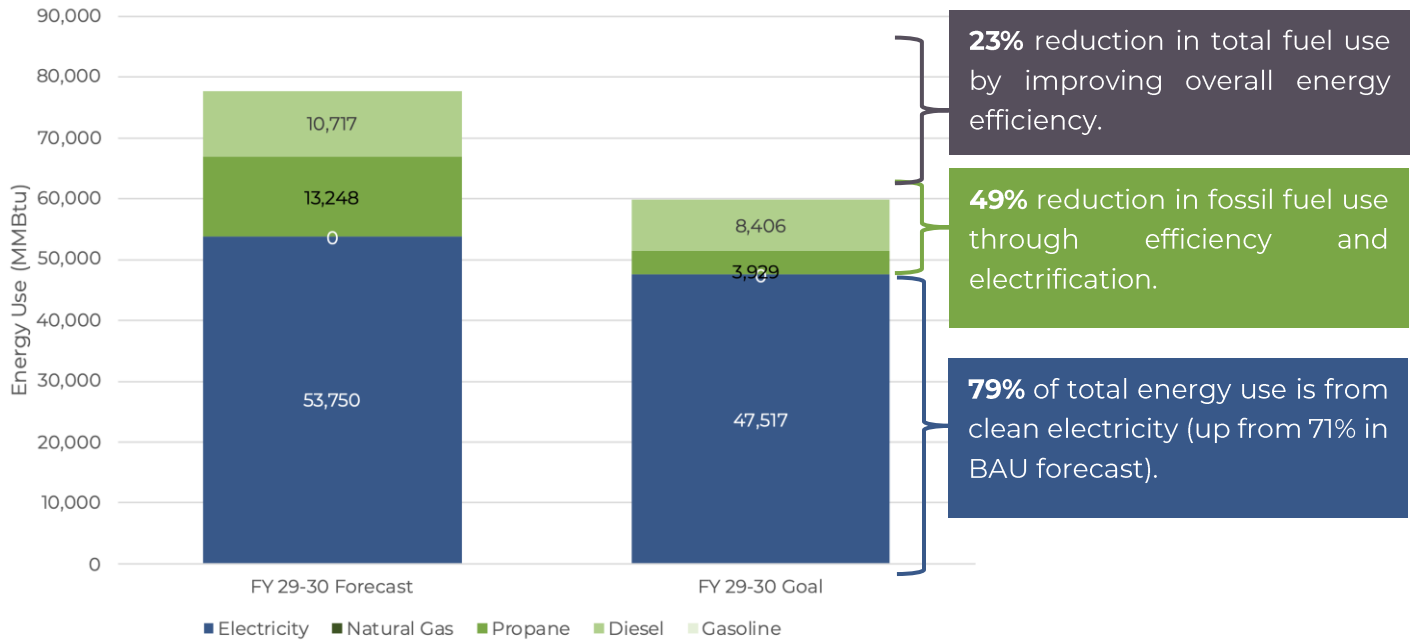
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	56,884 gallons	145,582 gallons
	Diesel	Off-Road Equipment	60,231 gallons	65,609 gallons
	Diesel	On-Road Vehicles	6,548 gallons	11,664 gallons
	Gasoline	On-Road Vehicles	0 gallons	0 gallons
Scope 2	Electricity	Buildings	3,601 MWh	5,720 MWh
	Electricity	Lifts	2,586 MWh	2,904 MWh
	Electricity	Snowmaking	5,566 MWh	7,129 MWh

## EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (3,900 MTCO<sub>2</sub>e) at Loon Mountain Resort by Scope, as well as the projected emissions in 2030 (5,413 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, Loon Mountain Resort will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Loon Mountain Resort owns and manages its own high-voltage equipment and infrastructure; electrification of buildings, adding a charging system, and other electric expansion may require significant changes to this infrastructure
- Expansion of terrain and new facilities will increase the resort’s overall energy consumption but from the onset, will allow modern energy efficiency practices to be put in place
- Most of the land on which Loon Mountain Resort operates is owned by the National Forest Service and a private third party, leaving limited opportunity for on-site renewable energy generation
- Operating a shuttle service to select lodging properties in the local area reduces the number of personal vehicles traveling to the resort; current fleet of shuttles is diesel powered and provides an opportunity to electrify and reduce diesel fuel usage

## KEY PARTNERS

- Partners with [New Hampshire Electric Coop](#) and received rebates for snowmaking efficiency improvements and food and beverage appliance upgrades





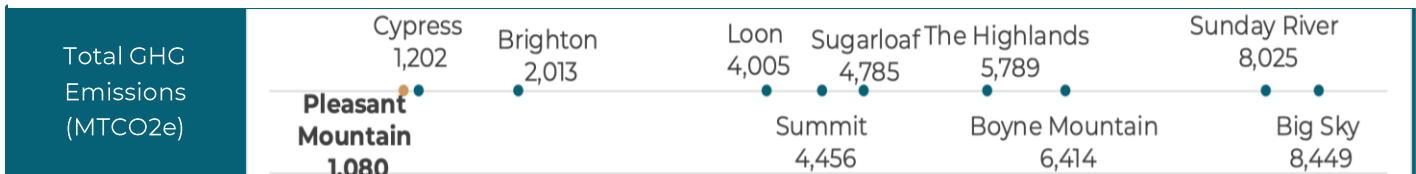
## PLEASANT MOUNTAIN

### 2030 NET ZERO EMISSIONS PLAN

Pleasant Mountain's 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Pleasant Mountain, located in Bridgton, Maine.

Pleasant Mountain has the lowest GHG emissions among Boyne Resorts' portfolio and is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides specifics of Pleasant Mountain's journey to net zero emissions including:

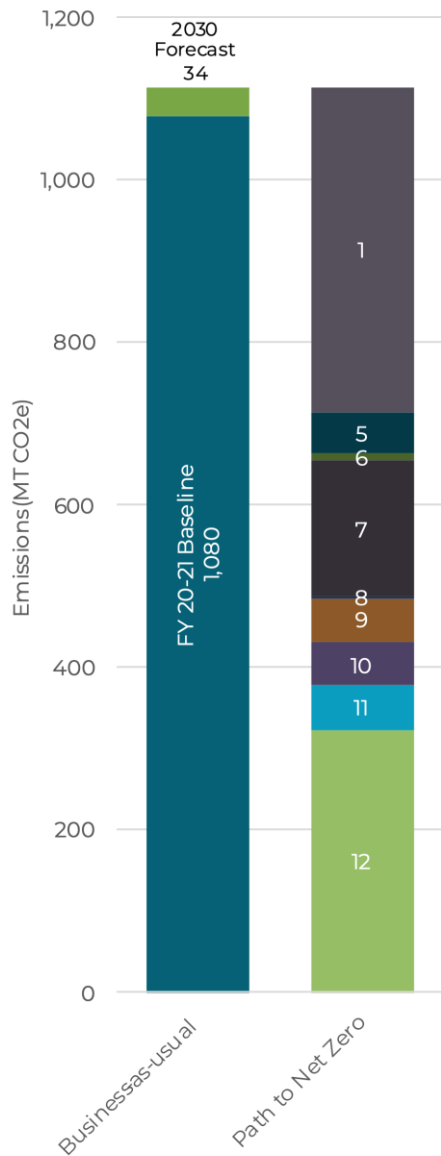
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Pleasant Mountain's journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Reduced emissions from snowmaking by converting 50% of the resort's air compressors from diesel to electric
- Replaced an older tractor with a more efficient Tier 4 engine model
- Retired more than 10 propane-fired patio heaters and replaced the lodge's original propane donut machine with an electric unit

# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.091 MTCO2e/MWh	399 MTCO2e (36%)
2 Electrical Infrastructure	✓ n/a	n/a
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ n/a <sup>2</sup>	n/a
5 Existing Building Decarbonization	✓ 20% energy use reduction ✓ 40% fossil fuel energy use electrified	52 MTCO2e (5%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 121 kBtu/sq. ft. ✓ Electrify 100% of typical fossil fuel use	8 MTCO2e (1%)
7 Off-Road Equipment Efficiency & Electrification	✓ 40% off-road diesel use reduction	168 MTCO2e (15%)
8 On-Road Vehicle Efficiency & Electrification	✓ 1% on-road gasoline fuel use reduction ✓ 100% on-road diesel fuel use reduction	<1 MTCO2e (<1%)
9 On-Site Renewable Energy Generation	✓ 19 kW on-site solar PV	54 MTCO2e (5%)
10 Utility Renewable Energy Subscription	✓ 24 MWh of electricity use subscribed through utility	54 MTCO2e (5%)
11 REC Purchases	✓ RECs purchased to cover 24 MWh of electricity use	54 MTCO2e (5%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	323 MTCO2e (29%)
<b>Total Impact:</b>		<b>1,114 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.

<sup>2</sup> Snowmaking forecast planned for Winter 2022/23.

# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, as well as direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Pleasant Mountain’s energy use was 12,199 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Pleasant Mountain continues business as usual.

## KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Maine (6)

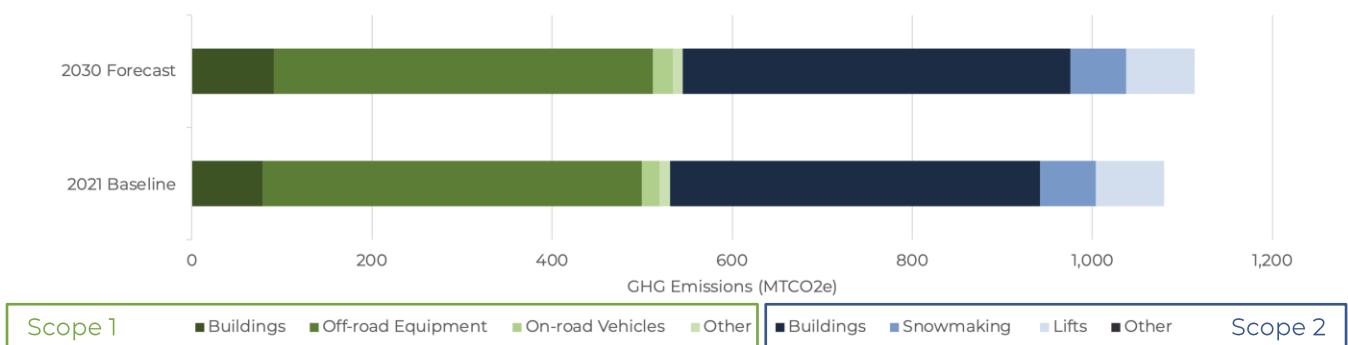
**ELECTRIC UTILITY:** Central Maine Power and Wholesale Energy Purchasing

**NEW BUILDING ENERGY CODE:** IECC 2015

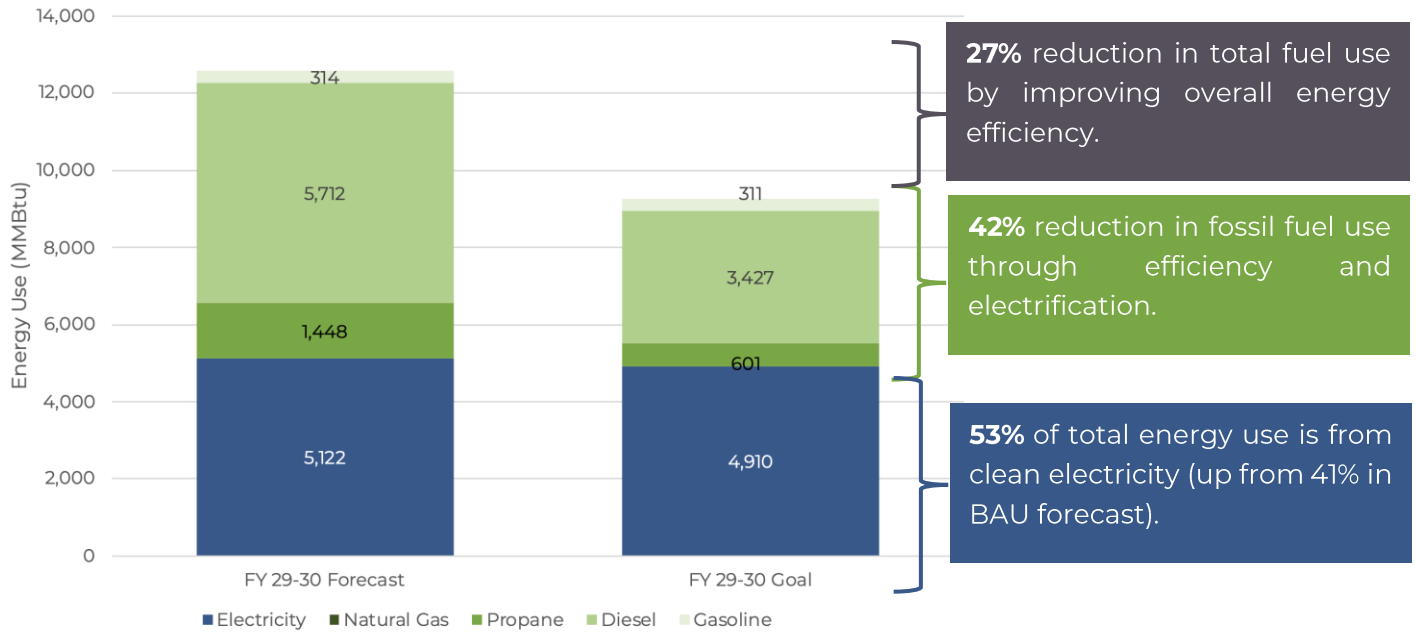
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	13,762 gallons	15,915 gallons
	Diesel	Off-Road Equipment	41,189 gallons	41,189 gallons
	Diesel	On-Road Vehicles	0 gallons	0 gallons
	Gasoline	On-Road Vehicles	2,300 gallons	2,511 gallons
Scope 2	Electricity	Buildings	1,085 MWh	1,137 MWh
	Electricity	Lifts	202 MWh	202 MWh
	Electricity	Snowmaking	163 MWh	163 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (1,080 MTCO<sub>2</sub>e) at Pleasant Mountain by Scope, as well as the projected emissions in 2030 (1,114 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, Pleasant Mountain will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- There are few electrical reliability issues within the local grid servicing the resort, making a transition to more electrification easier and more impactful
- New parking lot completed in early 2023 presents a great opportunity for renewable energy generation along with an increase in EV charging stations
- Several vehicles and pieces of equipment are reaching the end of their service life, presenting an opportunity for electrification and improved efficiencies
- New building construction in the coming years will provide potential sites for additional rooftop solar arrays

## KEY PARTNERS

- **Efficiency Maine** has assisted on a number of projects at the resort, including lighting upgrades and will continue to provide assistance such as grants and rebates to support emissions reduction projects
- Partnered with local solar installers on roof-mounted solar projects





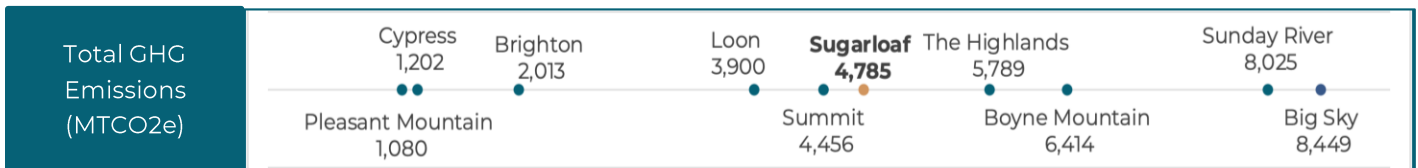
## SUGARLOAF

### 2030 NET ZERO EMISSIONS PLAN

Sugarloaf's 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Sugarloaf, located in Carrabassett Valley, Maine.

Sugarloaf has the 5<sup>th</sup> highest GHG emissions among Boyne Resorts' portfolio and is above its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Sugarloaf's journey to net zero emissions including:

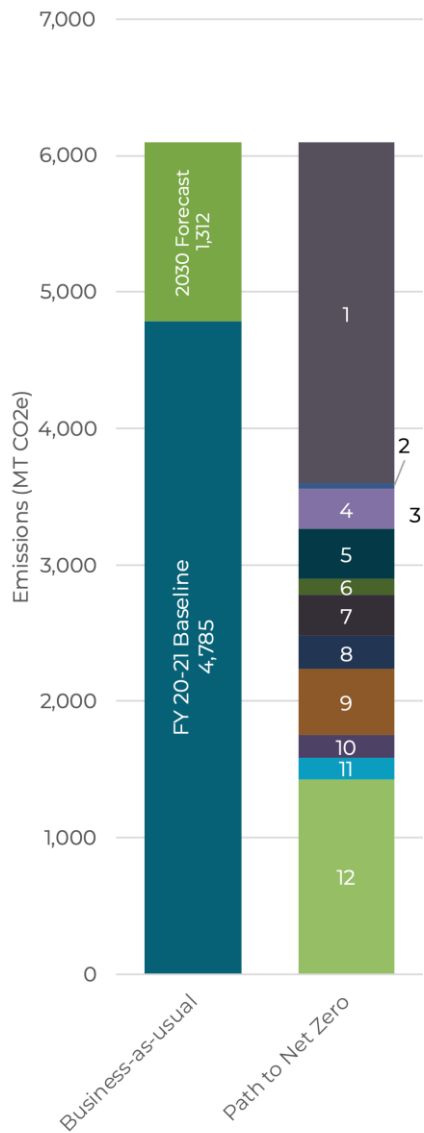
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Sugarloaf's journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities

#### Project Highlights

- Improved snowmaking efficiencies with the installation of 250 new high-efficiency snow guns and construction of a booster pump house mid-mountain
- Added four new Level 2 EV chargers at the golf course, with plans to expand EV charger infrastructure in Lot E and the Outdoor Center during the 2022-23 season
- Completed various energy efficiency projects in the base lodge, including LED lighting retrofits and installation of improved insulation and a new heating system and thermostat controls







Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0.070 MTCO2e/MWh	2,498 MTCO2e (41%)
2 Electrical Infrastructure	✓ 4% savings of off-road diesel	39 MTCO2e (<1%)
3 Lift Energy Efficiency	✓ n/a	n/a
4 Snowmaking Energy Efficiency	✓ 4,222 MWh savings	297 MTCO2e (5%)
5 Existing Building Decarbonization	✓ 40% energy use reduction ✓ 50% fossil fuel energy use electrified	367 MTCO2e (6%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 65 kBtu/sq. ft. ✓ Electrify 100% of typical fossil fuel use	111 MTCO2e (2%)
7 Off-Road Equipment Efficiency & Electrification	✓ 30% off-road diesel use reduction	308 MTCO2e (5%)
8 On-Road Vehicle Efficiency & Electrification	✓ 70% on-road gasoline use reduction ✓ 50% on-road diesel use reduction	240 MTCO2e (4%)
9 On-Site Renewable Energy Generation	✓ 271 kW on-site solar PV	484 MTCO2e (8%)
10 Utility Renewable Energy Subscription	✓ 115 MWh of electricity use subscribed through utility	161 MTCO2e (3%)
11 REC Purchases	✓ RECs purchased to cover 115 MWh of electricity use	161 MTCO2e (3%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,429 (24%)
<b>Total Impact:</b>		<b>6,097 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.

# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Sugarloaf’s energy use was 64,728 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Sugarloaf continues business as usual.

## KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Maine (6)

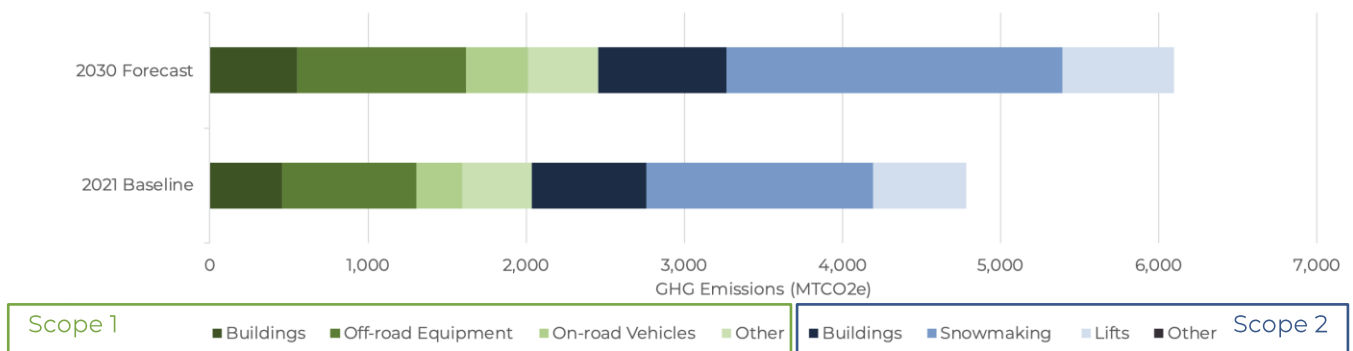
**ELECTRIC UTILITY:** CMP and Constellation

**NEW BUILDING ENERGY CODE:** IECC 2015

	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	79,862 gallons	96,254 gallons
	Diesel	Off-Road Equipment	83,173 gallons	104,798 gallons
	Diesel	On-Road Vehicles	5,383 gallons	6,395 gallons
	Gasoline	On-Road Vehicles	26,357 gallons	37,083 gallons
Scope 2	Electricity	Buildings	3,241 MWh	3,632 MWh
	Electricity	Lifts	2,632 MWh	3,156 MWh
	Electricity	Snowmaking	6,403 MWh	9,473 MWh

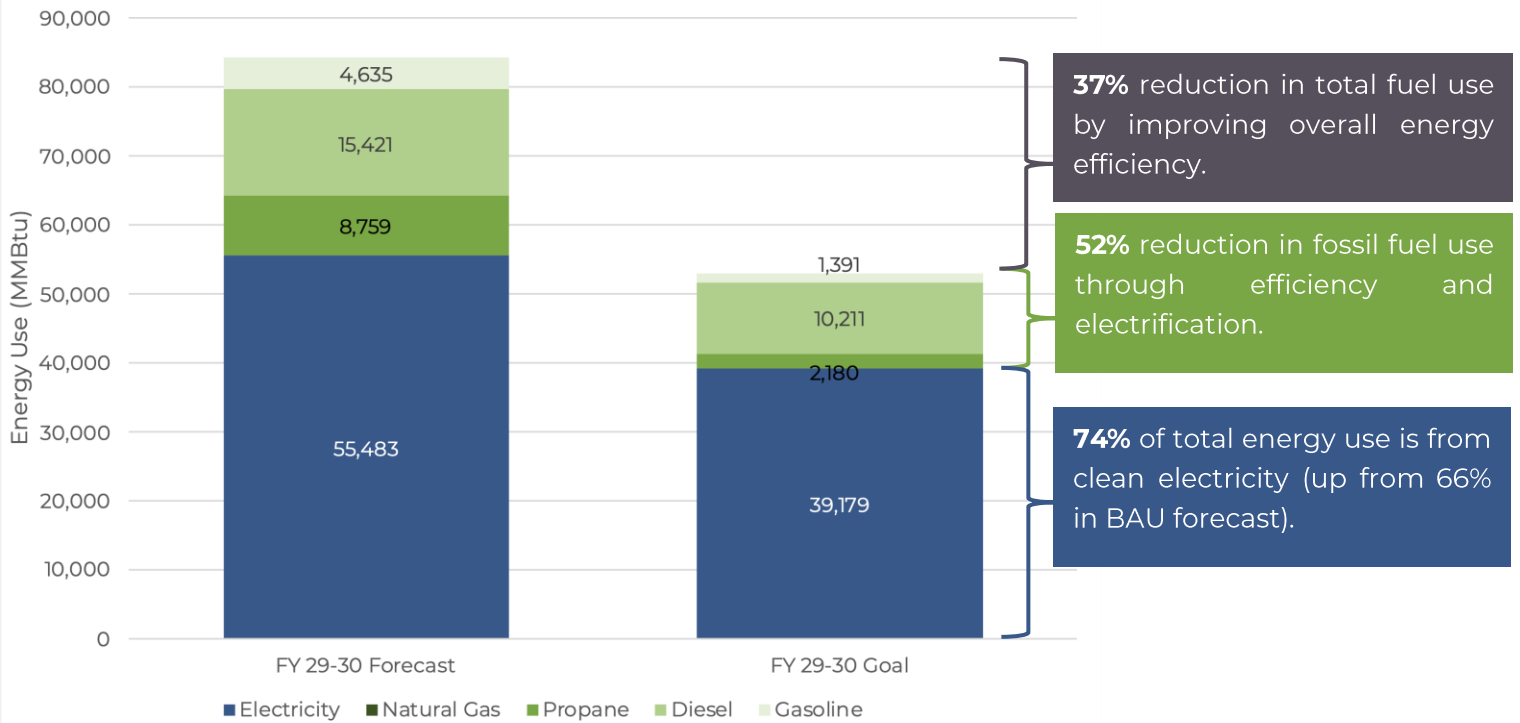
# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (4,785 MTCO<sub>2</sub>e) at Sugarloaf by Scope, as well as the projected emissions in 2030 (6,097 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



# ENERGY SYSTEM TRANSFORMATION

To reach net zero by 2030, Sugarloaf will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- With the West Mountain Expansion project, snowmaking acreage will increase significantly, but electricity usage for snowmaking will decrease with installation of high-efficiency equipment
- Sugarloaf is a remote resort with high exposure to power outages, however, backup generation is currently only used for a few hours outside of more impactful or isolated storms
- Base Lodge boiler is at its end of life and replacement will allow for new and innovative heating solutions
- Significant winds on the mountain as well as ample availability of land could allow for renewable energy generation through small-scale wind turbine projects or solar arrays

## KEY PARTNERS

- Collaborates with [Kingfield Elementary](#), the [University of Maine Farmington](#), and [Carabassett Valley Academy](#) on educational talks and community events
- Member of [Sugarloaf Area Sustainability Initiative \(SASI\)](#), a group founded in 2018 and composed of community members, and local schools, town council, and Sugarloaf representatives, who collaborate to identify and implement sustainability-related initiatives, creating a culture of awareness and action that goes beyond resort boundaries





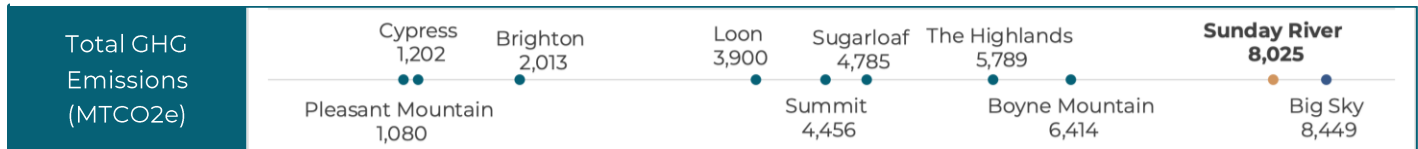
## SUNDAY RIVER RESORT

### 2030 NET ZERO EMISSIONS PLAN

Sunday River Resort's 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments for 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at Sunday River Resort, located in Newry, Maine.

Sunday River Resort has the 2<sup>nd</sup> highest GHG emissions among Boyne Resorts' portfolio and is above its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of Sunday River Resort's journey to net zero emissions including:

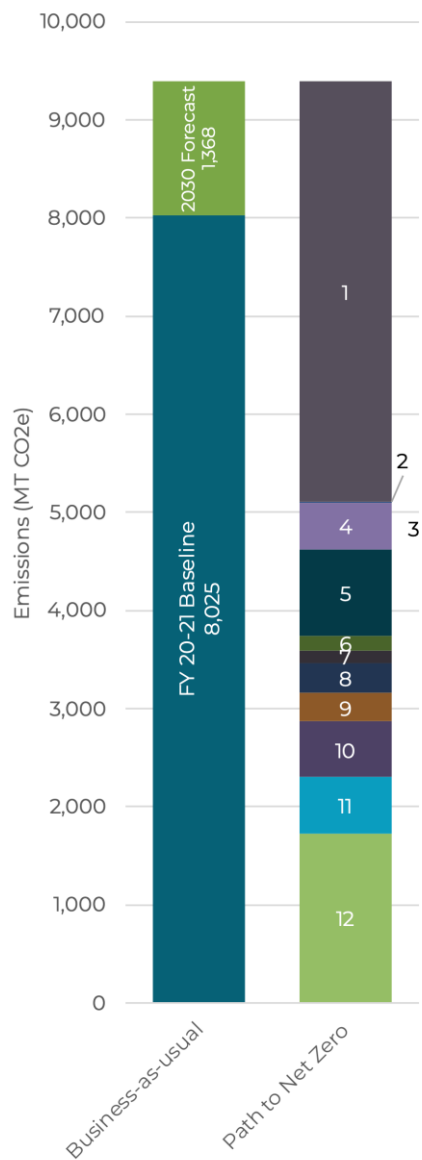
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing Sunday River Resort's journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities

#### Project Highlights

- Snowmaking upgrades at Sunday River Resort in 2021 and 2022 resulted in an energy use savings of 1,925,006 kWh, and additional planned snowmaking upgrades are projected to result in a total energy savings of 4,797,642 kWh
- Recently completed four major LED retrofits of lighting in sizeable buildings and beginning to replace hill lighting with LEDs
- Installed electric heat pumps at the new pump house/patrol building and installed occupancy timers on lift house heaters



# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Blended emissions factor: 0.0701 MTCO2e/MWh	4,285 MTCO2e (45%)
2 Electrical Infrastructure	✓ 0.07% savings of off-road diesel	7 MTCO2e (<1%)
3 Lift Energy Efficiency	✓ 112,455 kWh savings	8 MTCO2e (<1%)
4 Snowmaking Energy Efficiency	✓ 6,691 MWh savings	469 MTCO2e (5%)
5 Existing Building Decarbonization	✓ 40% energy use reduction ✓ 80% fossil fuel energy use electrified	881 MTCO2e (9%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 70 kBtu/sq. ft. ✓ Electrify 100% of typical fossil fuel use	154 MTCO2e (2%)
7 Off-Road Equipment Efficiency & Electrification	✓ 20% off-road diesel use reduction	123 MTCO2e (1%)
8 On-Road Vehicle Efficiency & Electrification	✓ 60% on-road gasoline use reduction ✓ 50% on-road diesel use reduction	309 MTCO2e (3%)
9 On-Site Renewable Energy Generation	✓ 165 kW on-site solar PV	286 MTCO2e (3%)
10 Utility Renewable Energy Subscription	✓ 408 MWh subscribed through utility program	572 MTCO2e (6%)
11 REC Purchases	✓ RECs purchased to cover 408 MWh of electricity use	572 MTCO2e (6%)
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,726 (18%)
<b>Total Impact:</b>		<b>9,393 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.

# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts' net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, Sunday River Resort's energy use was 108,323 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if Sunday River continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Maine (6)

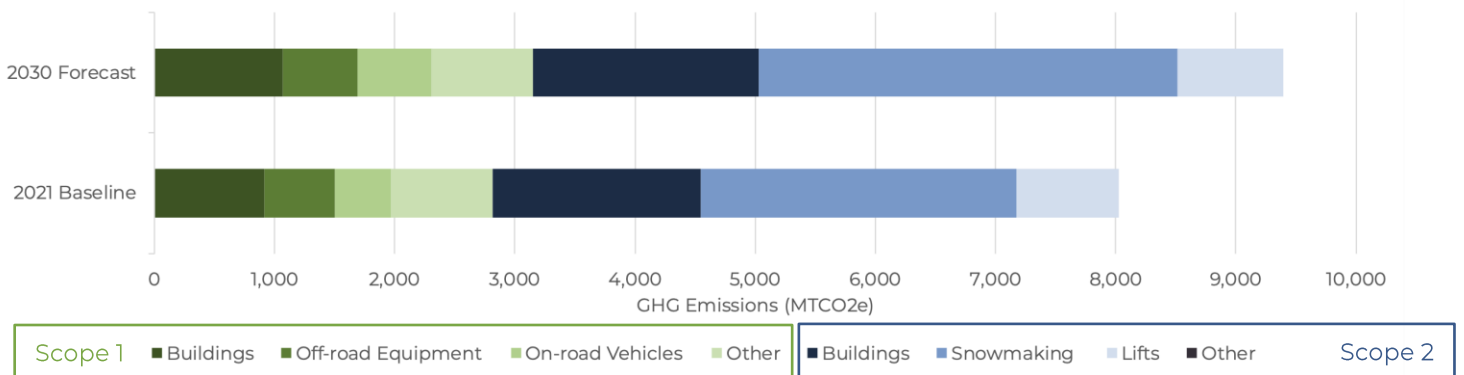
**ELECTRIC UTILITY:** Central Maine Power and Constellation

**NEW BUILDING ENERGY CODE:** IECC 2015

	Fuel	End Use	FY 20-21 Baseline Use	FY 29-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	159,958 gallons	186,586 gallons
	Diesel	Off-Road Equipment	57,446 gallons	60,797 gallons
	Diesel	On-Road Vehicles	24,416 gallons	31,127 gallons
	Gasoline	On-Road Vehicles	24,686 gallons	33,763 gallons
Scope 2	Electricity	Buildings	7,733 MWh	8,369 MWh
	Electricity	Lifts	3,786 MWh	3,923 MWh
	Electricity	Snowmaking	11,730 MWh	15,569 MWh

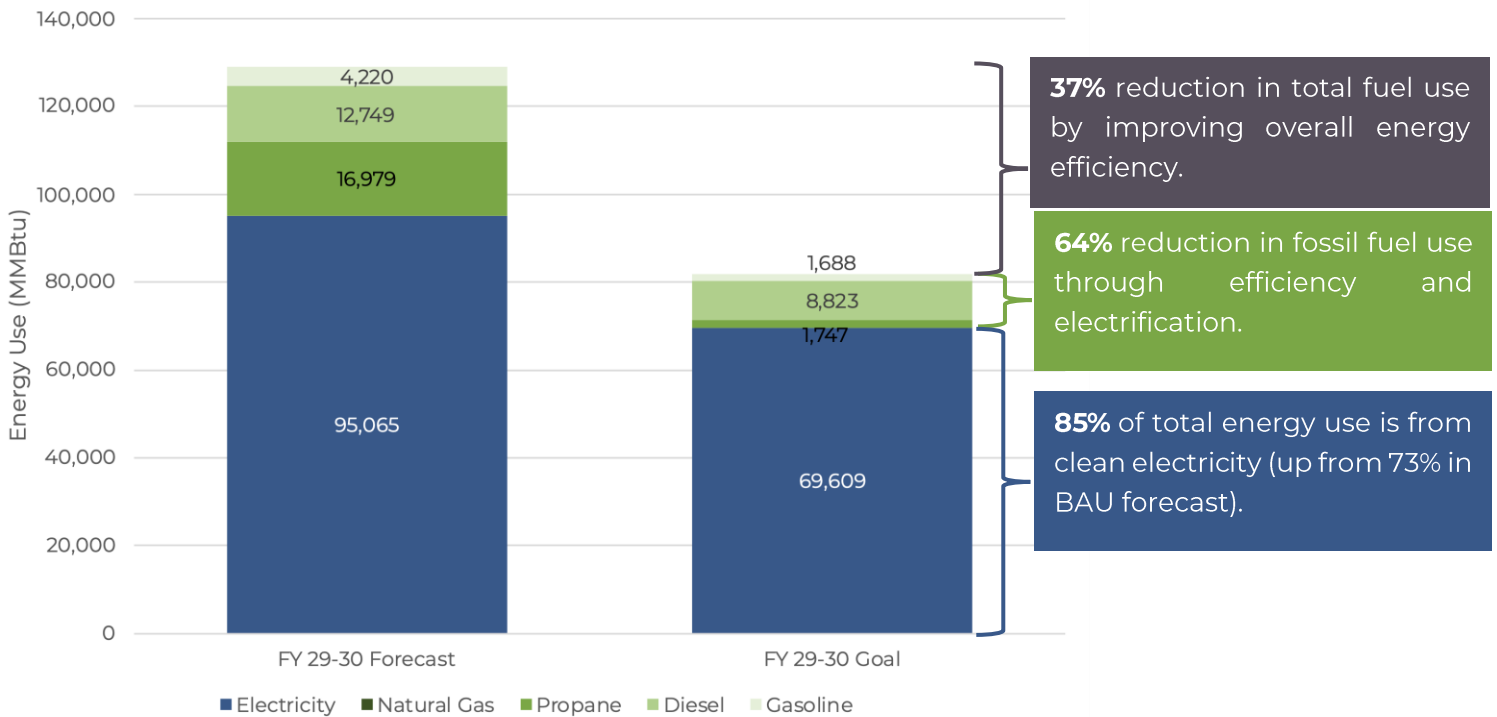
# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows current GHG emissions (8,025 MTCO<sub>2</sub>e) at Sunday River Resort by Scope, as well as projected emissions in 2030 (9,393 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



# ENERGY SYSTEM TRANSFORMATION

To reach net zero by 2030, Sunday River Resort will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



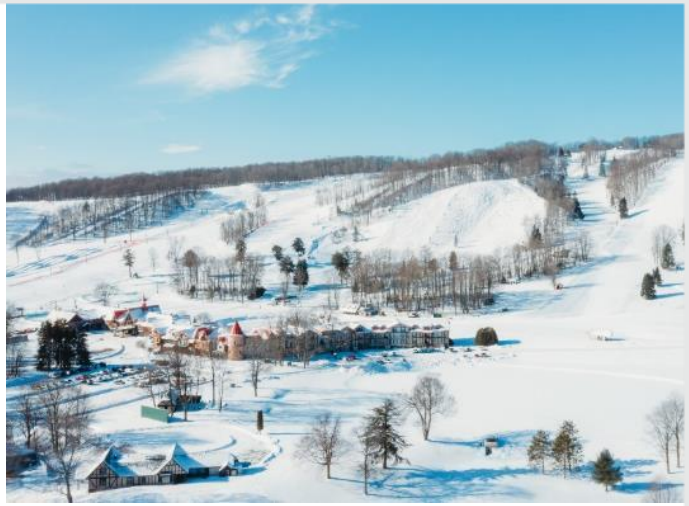
## KEY RESORT CONSIDERATIONS

- Energy audits at both resort hotels indicate that 40% efficiency gains are achievable
- Electrical outages are not frequent but can be lengthy, particularly at the Jordan Hotel
- With homeowners' associations (HOAs) at both hotels, each HOA board of directors must approve any upgrades and efficiency improvements
- While making more snow may be necessary due to increasingly variable weather, optimized snowmaking systems will allow a savings of over 5,000,000 kWh's annually against the FY 2020-21 baseline

## KEY PARTNERS

- Sponsored [Mountain Express and Mountain Explorer](#) bus services, providing rides from neighboring towns to the resort
- Alignment with local and regional climate goals, including those of the [Bethel Chamber of Commerce](#) and also [Mahoosuc Way](#), a community-driven effort to care for local communities and the environment while providing great outdoor recreation and visitor experiences in the Greater Bethel Area of Western Maine





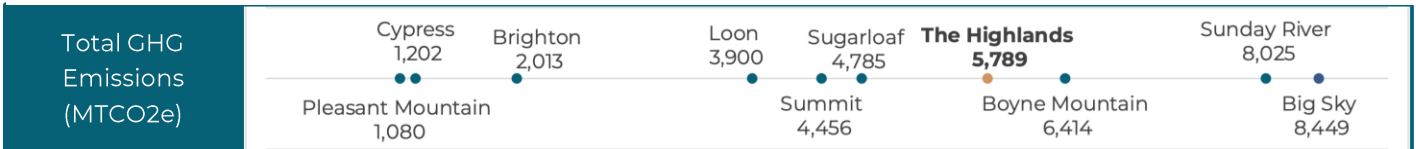
# THE HIGHLANDS

## 2030 NET ZERO EMISSIONS PLAN

The Highlands' 2030 Net Zero Emissions Plan supports Boyne Resorts' commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at The Highlands, located in Harbor Springs, Michigan.

The Highlands has the 4<sup>th</sup> highest GHG emissions among Boyne Resorts' portfolio and is above its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of The Highlands' journey to net zero emissions including:

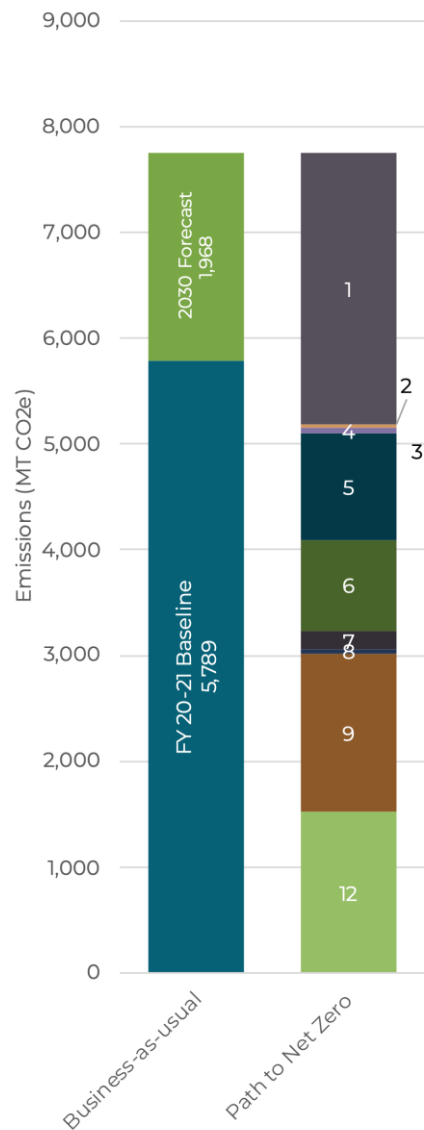
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing The Highlands' journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



### Project Highlights

- In 2021/22, replaced over 2,000 fluorescent and incandescent light bulbs with LEDs in various buildings on the property and in golf operations, with a projected energy savings of over 391,000 kWh per year
- Renovated north wing of Main Lodge, installing LED lighting systems with occupancy sensors in all spaces, improving insulation, replacing windows, and upgrading to smart refrigerators in all rooms
- Installed occupancy timers on all lift house heaters with a projected energy savings of over 120,000 kWh per year





Big Move		2030 Performance Target	Annual Savings Starting in 2030
1	Utility Clean Energy	✓ Blended emissions factor: 0.245 MTCO2e/MWh	2,577 MTCO2e (33%)
2	Electrical Infrastructure	✓ n/a	n/a
3	Lift Energy Efficiency	✓ 120,000 kWh savings	29 MTCO2e (0.4%)
4	Snowmaking Energy Efficiency	✓ 213 MWh savings	52 MTCO2e (1%)
5	Existing Building Decarbonization	✓ 40% energy use reduction ✓ 20% fossil fuel energy use electrified	1,007 MTCO2e (13%)
6	New Building Decarbonization	✓ Average EUI of new buildings: 28 kBtu/sq. ft. ✓ Electrify 20% of typical fossil fuel use	860 MTCO2e (11%)
7	Off-Road Equipment Efficiency & Electrification	✓ 40% off-road diesel use reduction	174 MTCO2e (2%)
8	On-Road Vehicle Efficiency & Electrification	✓ 40% on-road gasoline use reduction	39 MTCO2e (0.5%)
9	On-Site Renewable Energy Generation	✓ 1,794 kW on-site solar PV	1,491 MTCO2e (19%)
10	Utility Renewable Energy Subscription	✓ n/a	n/a
11	REC Purchases	✓ n/a	n/a
12	Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,528 (20%)
<b>Total Impact:</b>			<b>7,757 MTCO2e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.

# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also from direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, The Highlands’ energy use was 65,984 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if The Highlands continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Michigan (6)

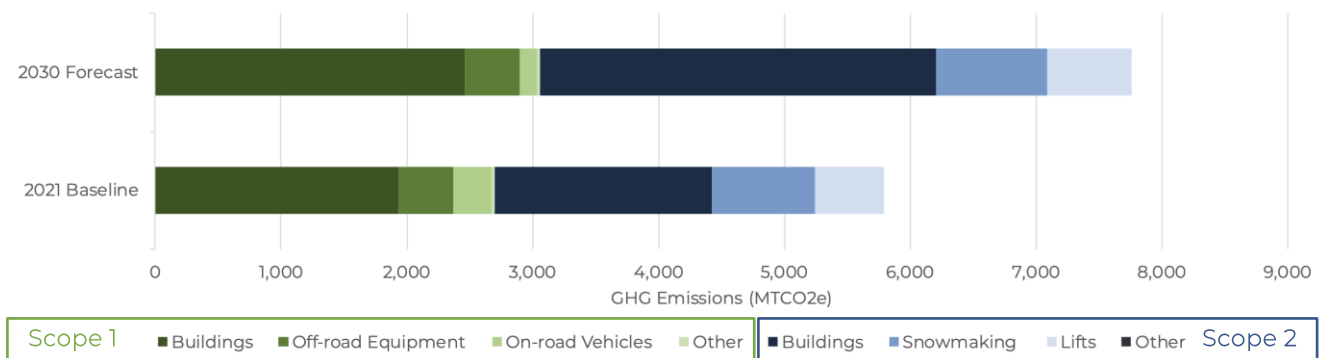
**ELECTRIC UTILITY:** Great Lakes Energy

**NEW BUILDING ENERGY CODE:** IECC 2015

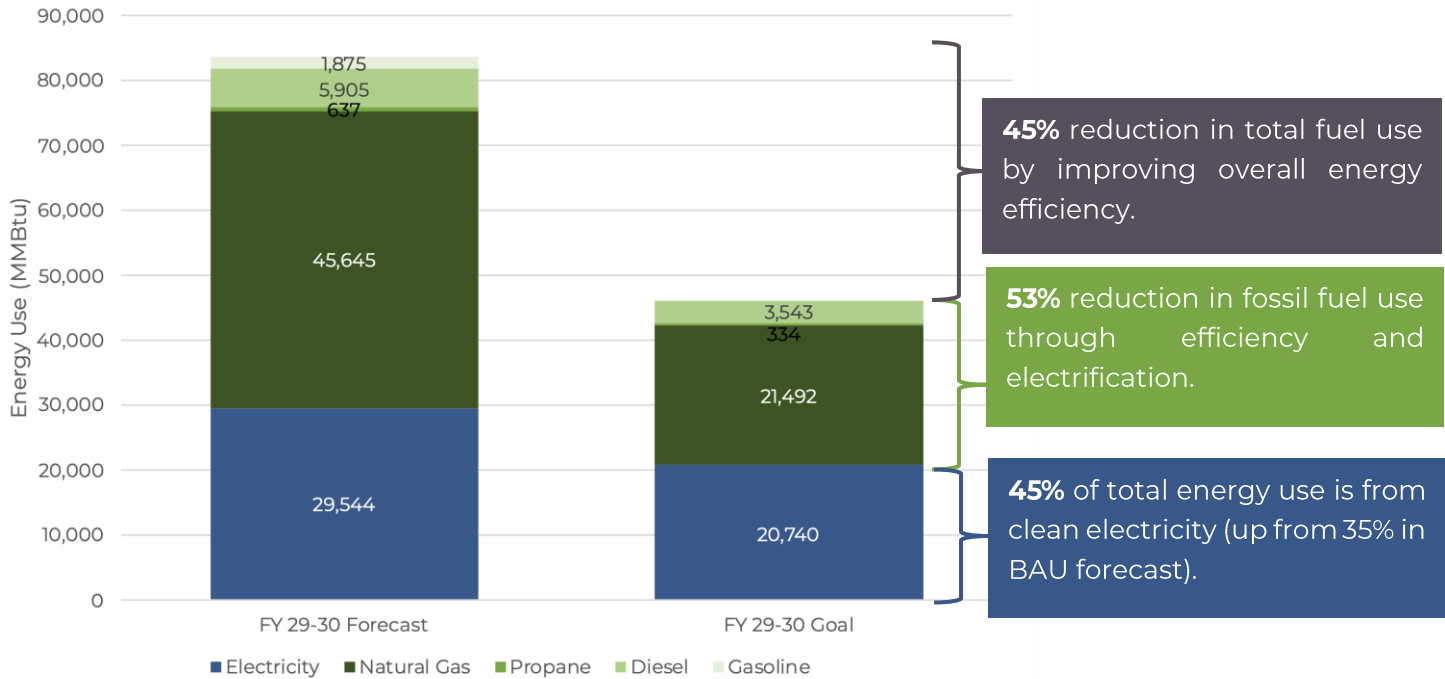
	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	358,002 therms	456,448 therms
	Propane	Buildings	5,359 gallons	7,005 gallons
	Diesel	Off-Road Equipment	42,579 gallons	42,579 gallons
	Diesel	On-Road Vehicles	0 gallons	0 gallons
	Gasoline	On-Road Vehicles	35,029 gallons	15,000 gallons
Scope 2	Electricity	Buildings	3,182 MWh	5,806 MWh
	Electricity	Lifts	1,003 MWh	1,231 MWh
	Electricity	Snowmaking	1,505 MWh	1,623 MWh

# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows the current GHG emissions (5,789 MTCO<sub>2</sub>e) at The Highlands by Scope, as well as the projected emissions in 2030 (7,757 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



To reach net zero by 2030, The Highlands will need to transform the energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Electrical outages are rare and quickly resolved when occurring, making electrification a viable alternative to fossil fuels
- Readily available natural gas is a cost barrier to the electrification of buildings
- The 2030 Journey improvements will allow for opportunities for considerable building efficiencies
- Owning a significant amount of land provides ample opportunity for on-site renewable energy generation

## KEY PARTNERS

- Increased composting efforts by 280% in the second year of the program, diverting 12,593 pounds of food waste from the landfill in partnership with [Emmet County Recycling](#) for an estimated 3 MTCO<sub>2e</sub> reduction
- Serve as a member of the Michigan Department of Environment, Great Lakes and Energy's Council on Climate Solutions working group, established to help guide the state in its goal to economy-wide carbon neutrality by 2050



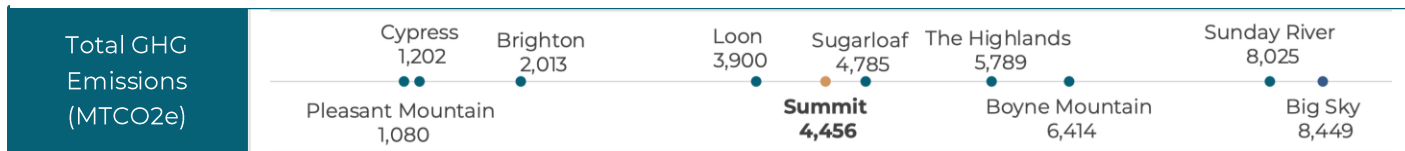


## THE SUMMIT AT SNOQUALMIE 2030 NET ZERO EMISSIONS PLAN

The Summit at Snoqualmie’s 2030 Net Zero Emissions Plan supports Boyne Resorts’ commitments to 100% clean electricity and net zero greenhouse gas emissions by 2030. It is based on specific conditions and opportunities at The Summit at Snoqualmie, located outside of Seattle, Washington.

The Summit at Snoqualmie has the 5<sup>th</sup> lowest GHG emissions among Boyne Resorts’ portfolio and is below its average for emissions per ski and summer visitor.

### RESORT EMISSIONS COMPARISON (FY 2020-21 BASELINE)



This plan provides the specifics of The Summit at Snoqualmie’s journey to net zero emissions including:

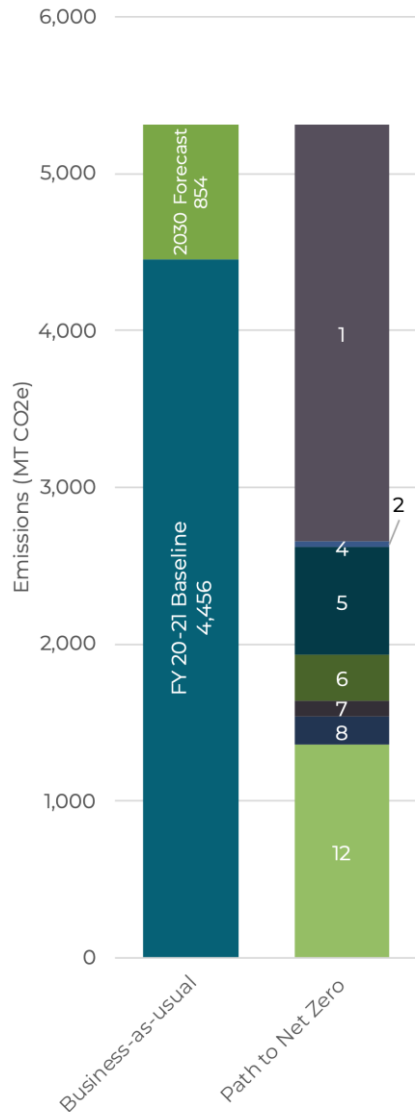
- Breakdown of energy use and GHG emissions by Scope, fuel type, and operations in baseline year FY 2020-21 and forecasted for FY 2029-30
- General factors and performance metrics influencing The Summit at Snoqualmie’s journey to net zero emissions
- Big Moves and their individual contributions to GHG reductions
- Short-term implementation priorities, project highlights, and community partnership opportunities



#### Project Highlights

- Installed an industrial composter to process on-site waste and minimize off-site hauling
- Completed LED retrofitting projects around property including maintenance buildings and select on-mountain locations
- Upgraded the boiler and furnace in Summit West base area to more efficient models

# PATHWAY TO NET ZERO



Big Move	2030 Performance Target	Annual Savings Starting in 2030
1 Utility Clean Energy	✓ Emissions factor: 0 MTCO <sub>2</sub> e/MWh	2,655 MTCO <sub>2</sub> e (50%)
2 Electrical Infrastructure	✓ 3.6% savings of off-road diesel	38 MTCO <sub>2</sub> e (1%)
3 Lift Energy Efficiency	✓ 7,280 kWh savings	0 MTCO <sub>2</sub> e
4 Snowmaking Energy Efficiency	✓ n/a	n/a
5 Existing Building Decarbonization	✓ 25% energy use reduction ✓ 60% fossil fuel energy use electrified	682 MTCO <sub>2</sub> e (13%)
6 New Building Decarbonization	✓ Average EUI of new buildings: 85 kBtu/sq. ft. ✓ Electrify 100% of typical fossil fuel use	294 MTCO <sub>2</sub> e (6%)
7 Off-Road Equipment Efficiency & Electrification	✓ 10% off-road diesel use reduction	102 MTCO <sub>2</sub> e (2%)
8 On-Road Vehicle Efficiency & Electrification	✓ 60% on-road gasoline use reduction ✓ 10% on-road diesel use reduction	182 MTCO <sub>2</sub> e (3%)
9 On-Site Renewable Energy Generation	✓ n/a	n/a
10 Utility Renewable Energy Subscription	✓ n/a	n/a
11 REC Purchases	✓ n/a	n/a
12 Offset Purchases	✓ Purchase offsets to cover remaining Scope 1 emissions	1,356 (26%)
<b>Total Impact:</b>		<b>5,310 MTCO<sub>2</sub>e (100%)<sup>1</sup></b>

<sup>1</sup> Percentages may not add up to 100% due to rounding.

# ENERGY USE BASELINE AND BUSINESS-AS-USUAL FORECAST

For Boyne Resorts’ net zero goal, Scope 1 and 2 emissions are considered. Scope 1 emissions result from on-site combustion of fossil fuels to heat buildings and fuel vehicles and equipment, and also direct release of greenhouse gases from refrigerants used in cooling equipment. Scope 2 emissions account for the emissions released during generation of electricity that is consumed on site. In FY 2020-21, The Summit at Snoqualmie used 56,337 MMBtu in total. The breakout of energy usage by end use is shown below along with projected energy use if The Summit at Snoqualmie continues business as usual.

### KEY RESORT CHARACTERISTICS

**STATE (CLIMATE ZONE):** Washington (5)

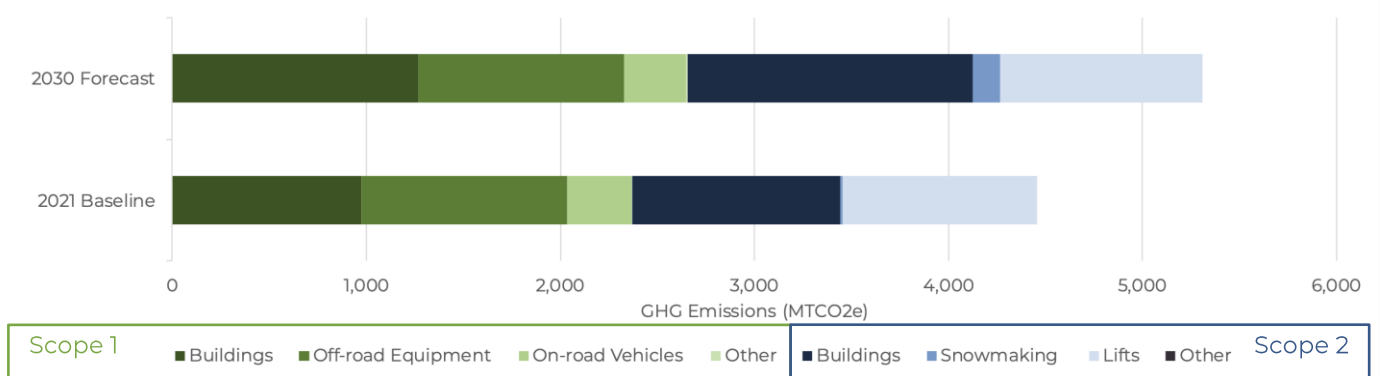
**ELECTRIC UTILITY:** Puget Sound Energy

**NEW BUILDING ENERGY CODE:** IECC 2018

	Fuel	End Use	FY 2020-21 Baseline Use	FY 2029-30 Forecasted Use
Scope 1	Natural Gas	Buildings	0 therms	0 therms
	Propane	Buildings	169,679 gallons	220,924 gallons
	Diesel	Off-Road Equipment	103,701 gallons	103,701 gallons
	Diesel	On-Road Vehicles	2,267 gallons	2,224 gallons
	Gasoline	On-Road Vehicles	35,354 gallons	34,115 gallons
Scope 2	Electricity	Buildings	3,278 MWh	4,502 MWh
	Electricity	Lifts	3,060 MWh	3,198 MWh
	Electricity	Snowmaking	45 MWh	433 MWh

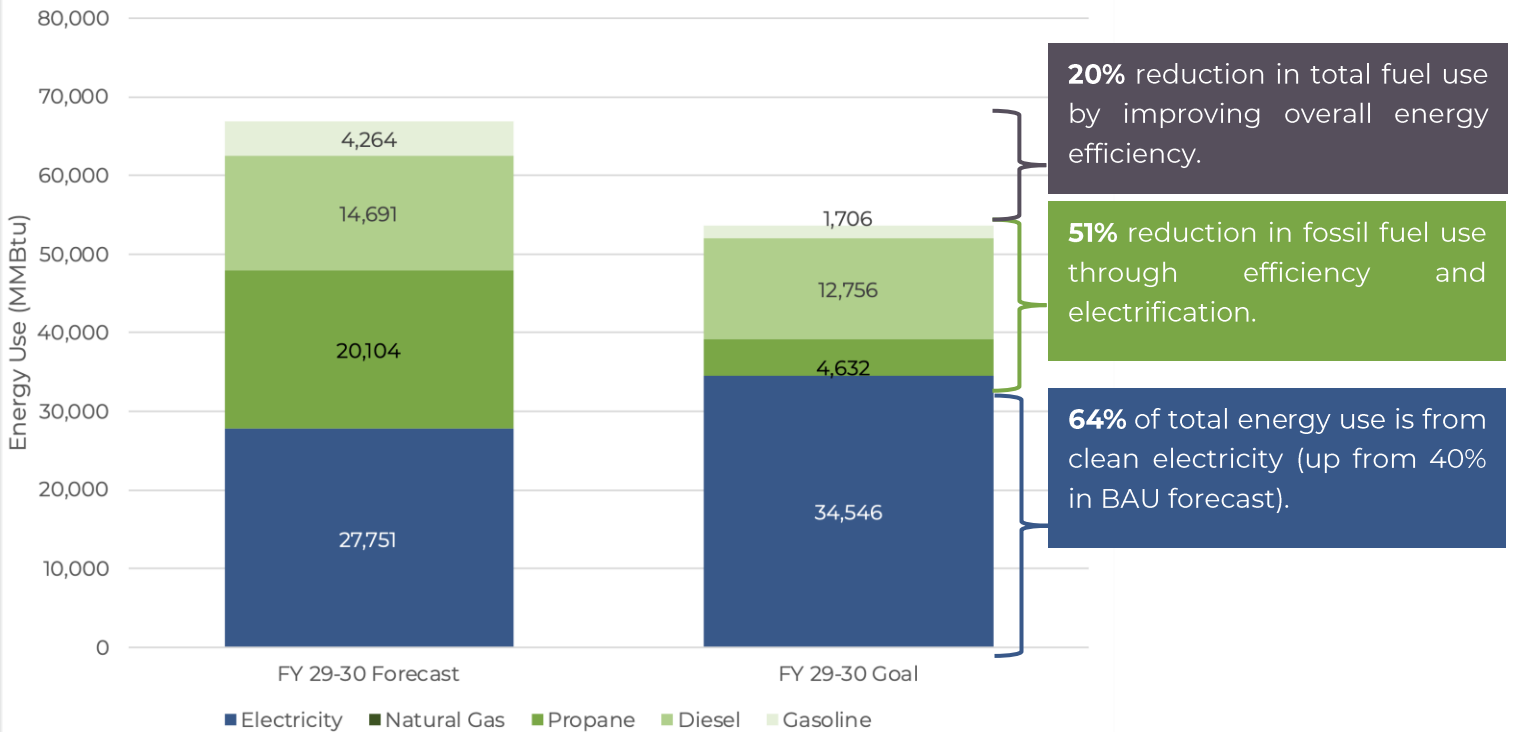
# EMISSIONS BASELINE AND BUSINESS-AS-USUAL FORECAST

The graph below shows current GHG emissions (4,456 MTCO<sub>2</sub>e) at The Summit at Snoqualmie by Scope as well as the projected emissions in 2030 (5,310 MTCO<sub>2</sub>e) if no steps are taken to mitigate emissions.



# ENERGY SYSTEM TRANSFORMATION

To reach net zero by 2030, The Summit at Snoqualmie will need to transform energy used on site, transitioning from fossil fuel use to clean electricity. The total energy system transformation and some key characteristics of this transformation are shown below:



## KEY RESORT CONSIDERATIONS

- Experiences frequent and lengthy power outages in part due to aging infrastructure.
- Washington State enacted ambitious climate goals and legislation, including a requirement for all new buildings to be 100% electrified (excluding backup generation), therefore all new square footage will be significantly closer to 2030 net zero goals
- Puget Sound’s goal for 100% clean energy by 2030 and carbon-free by 2045 aligns with the ForeverProject 100% clean electricity goal
- Solar installations are limited to 400 panels per primary meter

## KEY PARTNERS

- Implemented an "add-on" donation option in the online store to facilitate guest donations to the local and ski industry communities, partnering with non-profits such as Protect Our Winters and Black Farmers’ Collective
- Represented on steering committee for Wave NW, a non-profit group focused on equity, food waste reduction, and GHG reduction in the pacific northwest





Building a sustainable tomorrow by  
positively affecting the lasting implications  
our resorts, team members, and guests  
have on the planet.