Appendix C: Capital Department Planning Framework

Green Mountain Power
Department Capital Planning Frameworks
(Updated September 2021)

Information Technology

The objective of the Information Technology ("IT") capital planning process is to create both a roadmap for the deployment of technology-based solutions that serve and benefit the Company's customers, as well as to address and respond to the technical needs of the Company's internal business and operational units through the implementation of hardware, software, and service-based IT solutions. As IT-based platforms are increasingly becoming the point of contact for customer service and also as IT-based solutions are now woven throughout the work performed by all of GMP's departments, the overarching philosophy of our department's work is ensuring the security and resiliency of our core operations and communications to ensure ongoing service in all conditions.

The IT capital planning process identifies capital projects that deliver value to our customers in several ways:

- Customer Service Improvements
- Operational Improvements
- Capacity Improvements
- Security Improvements
- New Technologies
- Resiliency Improvements

Customer Service Improvements: Projects that improve the customer experience by providing secure web, smart-phone and application-based services and solutions that provide greater access and control from these platforms, facilitate customer support, and provide deeper insight into electricity usage and outage information.

Operational Improvements: Projects that create operational efficiencies through the automation or streamlining of business processes as well as the elimination or reduction of manually performed work. These projects span all operating areas of the organization from back-office functions to field-based grid communications to customer-facing service delivery.

Capacity Improvements: Projects required to meet the evolving, digital needs of our customers and our operations. As our business has digitized and automated the majority of it operating activities, the growth of data, networks, and infrastructure internally, externally in field, plant, and substation locations, as well as in the cloud has grown substantially. Maintaining these systems' capacity and performance is essential to delivering operational reliability to our customers.

Security Improvements: Projects that enhance the physical and logical security of the company's physical, logical, and grid assets, including enhancements to the company's ability to operate and recover in the event of system compromise, as well as the integrity, confidentiality, and privacy of customer data. Investments in this area will continue to take into account the best available information to proactively respond to emerging threats. The need for deeper investments based upon evolving regulatory and industry standards will continue to be reviewed and addressed internally and with regulators as needed.

New Technologies: periodically, GMP will invest in new technologies that offer a different, often improved value proposition over an existing technology. While these projects will typically fall underneath one of the prior four categories as well, at times we may pursue a GMP-created solution or new technology when traditional investments do not provide the operational and customer benefit we are seeking.

Resiliency Improvements: Projects that ensure core operational assets—such as control, assessment, recovery, and information assets—are accessible and have failover systems in the event of natural or man-made (i.e. cyberattack) disruptions, or that provide communication platforms for stakeholders, emergency responders, and customers during emergencies.

Property & Structures/Facilities

In order to deliver energy services to our customers, GMP operates statewide with a statewide workforce. GMP maintains 15 district operations locations and 3 administrative facilities throughout the service territory from which local services are delivered. Our objective is to have working spaces that are safe, that create an environment of interactivity and communication among our team members and help our work groups deliver services in a productive and quality manner. The majority of capital projects undertaken in the Property & Structures unit will consist of:

1. Replacing equipment that has either failed, has exceeded its normal life expectancy or is obsolete and can no longer be economically operated or maintained.
2. Accommodating systematic changes (space, adjacency, material, equipment) that workgroups need to function to satisfactorily complete their goals. Accommodations can include modifying/renovating existing spaces, construction of new spaces or purchase and installation of equipment.

Historically, approximately 65% of the capital projects are planned as part of the budget development process and address issues related to category 1 or 2 above. Approximately 35% of property & structures capital projects are emergent and therefore not able to be identified at the time of budget development and approval. These projects are budgeted under a blanket which is built on a 5-year average. The unforeseen emergent projects consist of replacing failed equipment, furniture and racking to meet operational needs and were not able to be predicted.

The Property & Structures process identifies and prioritizes projects to land and buildings in any of the following ways:

- Safety Improvements
- Building Efficiencies
- Compliance with Regulatory Requirements
- Reliability Improvements
- Resiliency Improvements

Safety Improvements: Projects where a safety hazard has been identified that could result in injury to a GMP employee, customer or visitor. These projects create safe work areas inside and out of facilities that are free from hazards such trip and falls and such as lighting improvements, parking lot paving, roof replacements and constructing storage areas.

Building Efficiencies: Project that reduce GMP's energy consumption. These projects consist of replacement or upgrade to mechanical, electrical and HVAC systems such as replacing all HPS light fixtures to LED and LP unit heaters to infrared tube heaters.

Compliance with Regulatory Requirements: Projects that Property and Structures that are due to new regulatory requirement include life safety equipment (fire alarm & sprinkler Systems), underground oil tanks and storage of hazardous materials.

Reliability Improvements: Projects that are identified by operations that require the purchase of land to either construct a new substation or to expand a current substation. Operations provide a list of future sub expansions that have been prioritized due to age and demand.

Resiliency Improvements: Projects that are identified to help make our facilities, structures, and the systems housed in them better able to withstand the impacts of climate change including in particular mitigating the impact of increased flooding events, and to continue customer service in the event of such events. This work typically goes hand-in-hand with other department priorities, including the resiliency of our T&D infrastructure, such as substations, or other critical components such as creating redundancies for our IT systems.

Transportation/Fleet

Overview:

GMP's statewide operations are supported by a transportation fleet of nearly 600 vehicles and mobile equipment with a wide range of vehicle types, including over 100 bucket and digger derrick trucks, 60 medium truck chassis between 3500 and 5500 series, 8 small boats for hydro facilities, 4 cranes, 2 semi/tractors, over 20 off-road tracked units, 18 fork lifts, 170 equipment and reel trailers, about 150 small cars/SUVs and light duty pickups and various ATVs, scissor lifts and mobile substations.

This diverse and distributed fleet supports all of our operations of field and office personnel, including transmission and distribution, power production, meter operations, substation operations, information technology and new initiatives. Fleet vehicles carry out our initial response when storms hit or transmission and distribution lines, and contribute greatly to our ability to recover from these events and provide resilient service for customers. Much of the heavy equipment, such as bucket trucks, digger derrick trucks and off-road tracked equipment, are operated in rural, rough terrain and extreme weather conditions whose engines run long daily duty cycles to power hydraulics and aerial equipment. The smaller vehicles vary in their use from field designers who meet with customers to scope out and design projects to our meter technicians who travel many miles to manage the integrity of our meter operations, to the small pool of vehicles available for other business travel. Most all of our vehicles—and especially those used for winter storm response—operate extensively during the snowy months and are subjected to salt brine damage. Trailers are used to transport equipment, haul poles, carry tools and other materials needed and install wire to support distribution infrastructure.

The entire fleet is maintained by 12 experienced diesel mechanics, who operate out of 4 district office garages in day and night shifts to ensure vehicle breakdowns and safety items experienced can be properly addressed and ready for work before the next work day. All aspects of maintenance activities are performed by the fleet team, ranging from routine vehicle services to welding and body work to complete engine overhauls. The fleet team is the lifeblood of the transportation fleet.

Fleet Objective:

The fleet team strives to deliver high value to our customers by ensuring GMP operations are equipped with safe, reliable vehicles and equipment, striking an appropriate balance between cost and uptime.

We manage our fleet purchases and replacements to ensure our fleet is right- sized to our operations and overall workforce. The goal is for value to be recovered from fleet assets at an

economical point in their lifecycle and for regular, predictable replacement to smooth out purchasing volumes and avoid price shocks and mitigate equipment scarcity and lead-time impacts.

Our updated fleet replacement strategy is targeted to achieve the following replacement cycles:

1) 8-year replacement cycle for capital equipment such as heavy-duty bucket and digger derrick trucks.
2) 7-year replacement cycle for light-duty vehicles such as pickup trucks and pooled passenger cars/SUVs that accumulate miles more quickly than the larger vehicles.

Fleet Capital Planning Strategy:

We develop our Fleet Capital Plan by assessing our needs against several criteria:

- **Safety**: Ensure that our vehicles are safe for travel and operation on public roads for both our employees, customers and the public at large.
    - Our fleet mechanics are licensed by the State of Vermont to perform vehicle inspections using the guidelines set by the VT Department of Transportation. Operators also perform daily checks of the vehicle and maintenance technicians perform overall safety and operational reviews during each scheduled service.

- **Age/Reliability Replacement**: Age and physical condition of vehicles are an important determining factor. As vehicles age, mechanical degradation, wear, rust, rot, and probability of catastrophic failure increases and repairs become more costly with longer downtimes from parts lead times and repair duration.
    - The final factor in identifying the vehicles to be replaced is the annual cost of maintenance. Because costs increase as vehicles age, our goal is to first replace the oldest unitsto reduce our overall cost.

- **Mix of Vehicle Types**: Our current fleet content is very broad due to the nature of the work being performed and type of travel. The mix of vehicles in the fleet includes both on- and off-road trucks and track units, trailers, ATVs, forklifts and small passenger vehicles, chosen dependent upon end use. For example, off road vehicles have become both a benefit to customers through more timely restoration in remote locations as well as a safety benefit for GMP employees, using an aerial lift where in the past this work was performed by climbing poles.
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- **Resiliency & Preparedness**: Ensure that current fleet content is prepared to support GMP's storm response efforts and maintain reliable and resilient service for our customers. E.g., consider vehicle to grid capability when available for EVs; range/MPG; off road and storage capabilities.

- **Vehicle New Technologies**: The Company continues to replace our existing fleet with the most efficient vehicles available. Electric vehicles will become a significant component of our fleet over time to reduce carbon and long term operating costs. Our current plan is to convert 100% of our passenger cars/SUVs and 25% of our light duty trucks to full EV by 2025 and continue that transition in the following years. In 2021, GMP received a grant and ordered 2 full electric trucks from Lion Electric; a Class 8 bucket truck and a Class 6 stake body truck. These 2 trucks will enter service in early 2022 and will mark the beginning of our transition path to full electric for our heavy trucks.

Innovative Pilots and New Initiatives

GMP's Innovative Pilots and New Initiative capital investments are focused on providing GMP customers with access to the latest energy innovations that help us transform the grid and provide value to all GMP customers. New programs are borne out of strategic partnerships and opportunities to stay on the leading edge of advances within the energy industry. By remaining nimble and flexible, we aim to ensure that we are taking advantage of all potential opportunities. We seek to use capital investments that will continue the transformation of our energy system with, and for, our customers. Climate change requires us to respond in two important ways: We must do everything we can to mitigate our carbon footprint and slow the impact we are all having on a warming climate, while at the same time, we need to manage the impacts that are caused by a changing climate such as major weather events, through continued focus on resiliency and reliability.

In order to meet these goals, the New Initiatives department employs experimental Innovative Pilot programs, tariffed offerings, and other capital projects, with an overarching focus on programs, products and services that reduce costs, improve resiliency/reliability, and/or reduce carbon. Some programs may begin as innovative pilots, and some may be developed outside of the pilot framework, but in both cases such programs will be developed with the following goals and criteria in mind:

- Helping to proliferate the use of more efficient heating and cooling that reduces the carbon impact or traditional systems;
- Supporting a more resilient electric grid through targeted generation and storage applications (i.e. microgrids);
- Expanding customer access to clean home and business backup power systems such as battery storage and leverages those resources to reduce costs and carbon;
- Generating new revenue streams, reducing costs for all customers by leveraging our platforms with new DERs and DER management systems;
- Increasing adoption of electric vehicles, including large vehicles such as buses and trucks, and improving the convenience, cost and flexible demand management of charging for these vehicles;
- Making Level 2 and Level 3 DCFC charging infrastructure accessible at workplace and public locations;
- Developing creative solutions to increase load control/demand response capability and avoid reliance on carbon-fueled peaking assets; and
- Coordinating with the State, communities, first responders, and other stakeholders to identify critical areas where robust energy and communication systems can help Vermont communities withstand extreme events and deploying Resiliency Zone solutions in these areas.

Generation

GMP's Power Generation capital planning is focused on improving the Safety, Environmental & Regulatory Compliance, Plant Reliability/Operating Efficiency and Production Output of Green Mountain Power's hydro, wind, solar and fuel generation assets, as well as our emerging battery storage assets. The power generation planning process looks at best practices and innovative technologies as a way to achieve these means, whenever possible. Programmatically, the capital projects will generally fall into one or more of these categories:

Safety:

The safety of GMP's employees and the Vermont public is central to our culture and the way we operate. We maintain a constant focus on any aspect of our business activity that may pose a safety risk and or improve enhance safe operations. Each year, we typically recommend, justify and perform a number of capital projects that remedy a potential or evolving safety risk or prevent one from arising in the first place. These projects can include the replacement of obsolete or deteriorated plant equipment that may no longer comply with current standards or safety codes, or that may have reduced functionality.

Environmental and Regulatory Compliance:

Improvements and upgrades to our facilities are periodically required to remain in compliance with environmental regulations, permits and licenses. An example of compliance-driven expenditures is GMP's Low Impact Hydro Institute (LIHI) certification on several of our hydro facilities. GMP has qualified several additional hydro plants as LIHI certified and will certify additional facilities in the future. In exchange for this certification, these facilities can qualify for additional Renewable Energy Credit ("REC") revenues, which provide an economic benefit to all GMP customers. The generating assets would not be eligible for certification without our constant focus on maintaining compliance requirements at the facilities. This includes, for example, fish passage improvements, bypass flows, and any other requirements that are borne out of State of Vermont water quality requirements, FERC requirements, and PUC rules.

In addition to LIHI certifying facilities, GMP has several facilities in the FERC relicensing process. The relicense process includes various studies that will produce data to be used in GMP's application, and ultimately influence FERC's decisions for license conditions as well as process with stakeholders. These new license conditions will govern project operations and provide protection and mitigation measures for environmental and recreational resources for at least the next 30 years. GMP is currently is a cycle that includes multiple re-licensing of our FERC-regulated hydro facilities.

Furthermore, as owner of critical dam infrastructure, GMP is obligated to assure continued safe and reliable dam operation. FERC has focused heavily on potential failure modes associated with various dam components such as concrete chute and unlined spillways, and construction methods, such as the pressurized outlet at the earthen dam at Goshen. GMP continues to prioritize upgrades and replacement of critical dam infrastructure to meet current industry standards.

Resiliency:

Similar to our safety and reliability work, GMP's generation work also focuses on identifying and addressing risks to assets that are particularly susceptible to climate change, focusing primarily on accelerating the pace of upgrades at GMP's high/significant hazard dam facilities based upon updated flood event modeling.

Hydropower generation facility upgrades will be selected to improve GMP's management of high/significant hazard dams, high-water events, and catastrophic event emergency operating protocols. As part of this prioritization, we consider the age of assets/water control equipment; elevation of systems; and effects expected based upon hydraulic and hydrologic modeling will aid in project selection. Priority is given to facilities that have not received electrical modernization to improve safety, reliability, and GMP's ability to both monitor and operate the facilities remotely.

Plant Reliability/Operating Efficiency:

Operating and maintaining the fleet of generation facilities efficiently requires strategic capital investments to maintain plant reliability and reduce the risk of unexpected failures that require emergency repairs. Unexpected plant failures cause the loss of cost effective, clean power but also creates unplanned costs. . Reliability projects may include work such as replacing bearings, governors, and control systems that are used to operate and manage the various generation assets. They can also include improvements to significant infrastructure like the condition of dams, spillways, and other water conveyance and control structures.

Production Output:

Where feasible, the team identifies opportunities to increase power production at existing generation facilities. In the case of hydro, this can mean replacing a runner with a more efficient unit, installing automated pond level controls to optimize flow conditions, or doing complete turbine/generator replacements. In addition, these projects may include

improving the required responsiveness of generation units to ISO New England operating commands such as improved SCADA controls and electrical upgrades for automating the power production facilities. Our philosophy is to have the most available, productive and responsive fleet of generating assets we can operate for the benefit of our customer.

Transmission and Distribution Lines/Substations

The objective of our Transmission and Distribution (T&D) Lines/Substations capital planning process is to create a roadmap for implementing the most important projects necessary to safely and reliably deliver power to our customers. GMP's sub-transmission system is an essential element of our grid infrastructure, connecting VELCO's and National Grid's high voltage transmission system with GMP's distribution system in order to serve GMP customers, as well as delivering energy to interconnect points for several of Vermont's other distribution utilities. GMP's distribution system delivers energy directly to our customers, as well as serving as the interconnect point for the growing number of customer-owned distributed generation systems. The T+D planning process identifies capital projects that deliver value to our customers in any of several ways:

- Safety Improvements
- Reliability & Resiliency Improvements
- Efficiency Improvements
- Capacity Improvements
- Compliance with Regulatory Requirements

Safety Improvements: Projects that eliminate or reduce a potential safety incident to GMP's customers or employees. These projects consist of replacing obsolete or deteriorated plant that may not comply with current standards and codes, or that may have reduced functionality.

Reliability & Resiliency Improvements: Projects that will increase reliability by reducing the number of outages, the duration of outages, and/or the number of customers affected by outages. These projects include projects in our normal construction plan as well as projects that have been constructed under the criteria originally laid out in our climate plan, now incorporated into our overall capital planning. The type of storm-hardened construction, for both overhead lines and for installation of cable in conduit undergrounding, is becoming a part of GMP's business as usual in order to enhance both reliability and resiliency.

Efficiency Improvements: Projects for the cost-effective reduction of system losses. These projects include capacitor placements, line re-conductoring, load balancing, circuit reconfiguration, and voltage conversions.

Capacity Improvements: Projects to upgrade facilities in order to avoid thermal overload of equipment. These projects may be the result of load growth or to provide backup capability (improved reliability) for another substation, circuit, or feeder.

Compliance with Regulatory Requirements: Projects required to achieve regulatory

compliance or to meet a contractual/tariff obligation. This might include a project that is the subject of a stipulation between GMP and the Department, Agency of Natural Resources or Agency of Transportation (state/municipal road jobs), and projects required by our joint-use and third-party attachment agreements. These projects, when appropriate are also using storm-hardening construction to receive an added benefit of resilience.