APPENDIX A

APPENDIX A – LEAP MODELING PROCESS

APPENDIX A – LEAP Modeling Process

A comprehensive explanation of the statewide LEAP modeling process is linked here. After statewide modeling, the Public Service Department worked with RPCs, including NRPC to disaggregate those outputs to the regional level based on fuel use, commercial square footage, and vehicle registrations.

APPENDIX B

APPENDIX B - ENERGY RESOURCE MAPPING

APPENDIX B - ENERGY RESOURCE MAPPING

The following is a list of the known constraints and possible constraints that have been included on the regional energy generation map in Appendix C (solar, wind, woody biomass, and hydroelectric). The energy generation maps are not intended to be used without the accompanying goals and policies of the NRPC contained in this plan. For more information about how the energy generation maps shall be used, please see Section V of the plan (see: Energy Resources Maps and the Public Service Board, Energy Generation Maps Methodology, and Northwest Regional Energy Generation Maps and Standards).

A. EXPLANATION OF CONSTRAINTS

The following is an explanation of known and possible constraints used by the NRPC to create the regional energy generation maps. This list of constraints shall also be considered by the NPRC during the review of generation project applications (Section 248) in the Northwest Region:

KNOWN CONSTRAINTS

Known constraints are considered high-priority resources and for this reason energy generation facilities shall not be located in areas where known constraints exist. For this planning initiative, known constraints have been removed from the base layer of each applicable type of resource (solar, wind, biomass, hydro).

POSSIBLE CONSTRAINTS

Possible Constraints are lower-priority resources. These resources often impact the siting process for generation facilities. New generation facilities shall not have an undue adverse impact upon possible constraints. Often, site-specific mitigation solutions are possible when possible constraints exist on a parcel. Therefore, possible constraints have been included in the area designated as “base” on the regional energy generation maps (solar, wind, biomass, hydro).

B. SOLAR GENERATION MAPS

STATE KNOWN CONSTRAINTS

- **Confirmed Vernal Pools:** There is a 600-foot buffer around confirmed vernal pools. (*Source: ANR*)
- **State Significant Natural Communities and Rare, Threatened, and Endangered Species:** Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile. (*Source: VCGI*)
- **River Corridors:** Only mapped River Corridors were mapped. Does not include 50 foot buffer for streams with a drainage area less than 2 square miles. (*Source: VCGI*)
- **National Wilderness Areas:** (*Source: VCGI*)
- **FEMA Floodways:** (*Source: VCGI*)
- **Class 1 and Class 2 Wetlands:** (*Source: VCGI*)

REGIONALLY IDENTIFIED CRITICAL RESOURCES (REGIONAL KNOWN CONSTRAINTS)

- **Designated Downtowns, Designated Growth Centers, and Designated Village Centers:** These areas the center of dense, traditional development in the region. This constraint does not apply to roof-mounted or parking lot canopy solar within such designated areas. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)

- **FEMA Flood Insurance Rate Map (FIRM) Special Flood Hazard Areas:** Special flood hazard areas as digitized by the NRPC were used—just 100-year flood plain (500-year floodplain not mapped). The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)
- **Ground and Surface Waters Drinking Protection Areas:** Buffered Source Protection Areas (SPAs) are designated by the Vermont Department of Environmental Conservation (DEC). SPA boundaries are approximate but are conservative enough to capture the area's most susceptible to contamination. Theinclusion of this resource as a regional constraint is consistent with goals and policies of the NorthwestRegional Plan. (*Source: Vermont Agency of Natural Resources [ANR]*)
- **Vermont Conservation Design Highest Priority Forest Blocks:** The lands and waters identified here are the areas of the state that are of highest priority for maintaining ecological integrity. Together, these lands comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features (bedrock, soils, elevation, slope, and aspect) on which plant and animal natural communities depend. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)
- **Public Water Sources:** A 200-foot buffer is used around public drinking water wellheads. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)
- **National Natural Landmark – Chazy Fossil Reef:** The Chazy Fossil Reef in Isle La Motte has been designated a National Natural Landmark by the US Department of Interior. (*Source: NRPC*)
- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that strongly deters or prohibits development have been included as a regional known constraint. The inclusion of this resource as a regional constraint is consistent with the goals and policies of the Northwest Regional Plan. Specific municipal land use districts included are outlined in Section D.

STATE POSSIBLE CONSTRAINTS

- **Potential and Probable Vernal Pools:** There is a 600-foot buffer around unconfirmed vernal pools. (*Source: ANR*)
- **Protected Lands:** This constraint includes public lands held by agencies with conservation or natural resource oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non profit organizations dedicated to conserving land or resources, and private parcels with conservation easements held by non profit organizations. (*Source: VCGI*)
- **Features from ANR's Vermont Conservation Design:** Highest Priority Interior Forest Blocks, Highest Priority Connectivity Blocks, Highest Priority Physical Landscape Blocks and Highest Priority Surface Water and Riparian Areas.
- **Deer Wintering Areas:** Deer wintering habitat as identified by the Vermont Agency of Natural Resources. (*Source: VCGI*)
- **Hydric Soils:** Hydric soils as identified by the US Department of Agriculture. (*Source: VCGI*)
- **Agricultural Soils:** Local, statewide, and prime agricultural soils are considered. (*Source: VCGI*)
- **Act 250 Agricultural Soil Mitigation Areas:** Sites conserved as a condition of an Act 250 permit. (*Source: VCGI*)

REGIONALLY IDENTIFIED RESOURCES (REGIONAL POSSIBLE CONSTRAINTS)

- **Class 3 Wetlands:** Class 3 wetlands in the region have been identified have been included as a Regional

Possible Constraint. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan (*Source: ANR*)

- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that deters, but does not prohibit development, have been included as a regional possible constraint. Specific municipal land use districts included are outlined in Section D.

OTHER MAP FEATURES

- **Three-Phase Distribution Lines:** All available utilities with service in any of the three regions (*Source: Green Mountain Power, Swanton Village Electric Department, Vermont Electric Coop, and Village of Enosburg Falls*) were mapped.
- **Transportation Infrastructure:** These were removed in the initial analysis performed by VCGI. Does not include parking lots. (*Source: VCGI*)
- **VELCO Transmission Lines and Substations:** (*Source: VCGI*)
- **Water Bodies:** Major water bodies (i.e., >1 square kilometer in surface area) are shown on maps as "Lakes/Ponds." (*Source: VCGI*)

C. BIOMASS MAPS

STATE KNOWN CONSTRAINTS

- **Confirmed and Unconfirmed Vernal Pools:** There is a 600-foot buffer around confirmed or unconfirmed vernal pools. (*Source: ANR*)
- **State Significant Natural Communities and Rare, Threatened, and Endangered Species:** Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile. (*Source: VCGI*)
- **River Corridors:** Only mapped River Corridors were mapped. Does not include 50-foot buffer for streamswith a drainage area less than 2 square miles. (*Source: VCGI*)
- **National Wilderness Areas:** (*Source: VCGI*)
- **FEMA Floodways:** (*Source: VCGI*)
- **Class 1 and Class 2 Wetlands:** (*Source: VCGI*)

REGIONALLY IDENTIFIED CRITICAL RESOURCES (REGIONAL KNOWN CONSTRAINTS)

- **Designated Downtowns, Designated Growth Centers, and Designated Village Centers:** These areas the center of dense, traditional development in the region. This constraint does not apply to roof-mounted solar within such designated areas. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)
- **FEMA Flood Insurance Rate Map (FIRM) Special Flood Hazard Areas:** Special flood hazard areas as digitized by the NRPC were used—just 100-year flood plain (500-year floodplain not mapped). The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)
- **Ground and Surface Waters Drinking Protection Areas:** Buffered Source Protection Areas (SPAs) are designated by the Vermont Department of Environmental Conservation (DEC). SPA boundaries are approximate but are conservative enough to capture areas most susceptible to contamination. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: Vermont Agency of Natural Resources [ANR]*)
- **Vermont Conservation Design Highest Priority Forest Blocks:** The lands and waters identified here are the areas of the state that are of highest priority for maintaining ecological integrity. Together, these lands comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features (bedrock, soils, elevation, slope, and aspect) on which plant and animal natural communities depend. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)
- **Public Water Sources:** A 200-foot buffer is used around public drinking water wellheads. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)

- **National Natural Landmark – Chazy Fossil Reef:** The Chazy Fossil Reef in Isle La Motte has been designated a National Natural Landmark by the US Department of Interior. (*Source: NRPC*)
- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that strongly deters or prohibits development have been included as a regional known constraint. The inclusion of this resource as a regional constraint is consistent with the goals and policies of the Northwest Regional Plan. Specific municipal land use districts included are outlined in Section D.

STATE POSSIBLE CONSTRAINTS

- **Protected Lands:** This constraint includes public lands held by agencies with conservation or natural resource oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non-profit organizations dedicated to conserving land or resources, and private parcels with conservation easements held by non-profit organizations. (*Source: VCGI*)
- **Deer Wintering Areas:** Deer wintering habitat as identified by the Vermont Agency of Natural Resources. (*Source: VCGI*)
- **Hydric Soils:** Hydric soils as identified by the US Department of Agriculture. (*Source: VCGI*)
- **Agricultural Soils:** Local, statewide, and prime agricultural soils are considered. (*Source: VCGI*)
- **Act 250 Agricultural Soil Mitigation Areas:** Sites conserved as a condition of an Act 250 permit. (*Source: VCGI*)

REGIONALLY IDENTIFIED RESOURCES (REGIONAL POSSIBLE CONSTRAINTS)

- **Class 3 Wetlands:** Class 3 wetlands in the region have been identified have been included as a Regional Possible Constraint. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan (*Source: ANR*)
- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that deters, but does not prohibit development, have been included as a regional possible constraint. Specific municipal land use districts included are outlined in Section D.

OTHER MAP FEATURES

- **Three-Phase Distribution Lines:** All available utilities with service in any of the three regions (*Source: Green Mountain Power, Swanton Village Electric Department, Vermont Electric Coop, and Village of Enosburg Falls*) were mapped.
- **Transportation Infrastructure:** These were removed in the initial analysis performed by VCGI. Does not include parking lots. (*Source: VCGI*)
- **VELCO Transmission Lines and Substations:** (*Source: VCGI*)
- **Water Bodies:** Major water bodies (i.e., >1 square kilometer in surface area) are shown on maps as “Lakes/Ponds.” (*Source: VCGI*)

D. WIND GENERATION MAPS

STATE KNOWN CONSTRAINTS

- **Confirmed and Unconfirmed Vernal Pools:** There is a 600-foot buffer around confirmed or unconfirmed vernal pools. (*Source: ANR*)

- **State Significant Natural Communities and Rare, Threatened, and Endangered Species:** Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile. (*Source: VCGI*)
- **River Corridors:** Only mapped River Corridors were mapped. Does not include 50 foot buffer for streams with a drainage area less than 2 square miles. (*Source: VCGI*)
- **National Wilderness Areas:** (*Source: VCGI*)
- **FEMA Floodways:** (*Source: VCGI*)
- **Class 1 and Class 2 Wetlands:** (*Source: VCGI*)

REGIONALLY IDENTIFIED CRITICAL RESOURCES (REGIONAL KNOWN CONSTRAINTS)

- **Designated Downtowns, Designated Growth Centers, and Designated Village Centers:** These areas the center of dense, traditional development in the region. This constraint does not apply to roof-mounted solar within such designated areas. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)
- **FEMA Flood Insurance Rate Map (FIRM) Special Flood Hazard Areas:** Special flood hazard areas as digitized by the NRPC were used—just 100-year flood plain (500-year floodplain not mapped). The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: NRPC*)
- **Ground and Surface Waters Drinking Protection Areas:** Buffered Source Protection Areas (SPAs) are designated by the Vermont Department of Environmental Conservation (DEC). SPA boundaries are approximate but are conservative enough to capture areas most susceptible to contamination. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: Vermont Agency of Natural Resources [ANR]*)
- **Vermont Conservation Design Highest Priority Forest Blocks:** The lands and waters identified here are the areas of the state that are of highest priority for maintaining ecological integrity. Together, these lands comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features (bedrock, soils, elevation, slope, and aspect) on which plant and animal natural communities depend. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)
- **Public Water Sources:** A 200-foot buffer is used around public drinking water wellheads. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan. (*Source: ANR*)
- **National Natural Landmark – Chazy Fossil Reef:** The Chazy Fossil Reef in Isle La Motte has been designated a National Natural Landmark by the US Department of Interior. (*Source: NRPC*)
- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that strongly deters or prohibits development have been included as a regional known constraint. The inclusion of this resource as a regional constraint is consistent with the goals and policies of the Northwest Regional Plan. Specific municipal land use districts included are outlined in Section D.

STATE POSSIBLE CONSTRAINTS

- **Protected Lands:** This constraint includes public lands held by agencies with conservation or natural resource-oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non-profit organizations

dedicated to conserving land or resources, and private parcels with conservation easements held by non-profit organizations. (*Source: VCGI*)

- **Deer Wintering Areas:** Deer wintering habitat as identified by the Vermont Agency of Natural Resources. (*Source: VCGI*)
- **Hydric Soils:** Hydric soils as identified by the US Department of Agriculture. (*Source: VCGI*)
- **Agricultural Soils:** Local, statewide, and prime agricultural soils are considered. (*Source: VCGI*)
- **Act 250 Agricultural Soil Mitigation Areas:** Sites conserved as a condition of an Act 250 permit. (*Source: VCGI*)

REGIONALLY IDENTIFIED RESOURCES (REGIONAL POSSIBLE CONSTRAINTS)

- **Class 3 Wetlands:** Class 3 wetlands in the region have been identified have been included as a Regional Possible Constraint. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan (*Source: ANR*)
- **Municipal Conservation Land Use Areas:** Conservation Land Use Districts, as designated in municipal plans, that include strict language that deters, but does not prohibit development, have been included as a regional possible constraint. Specific municipal land use districts included are outlined in Section D.

OTHER MAP FEATURES

- **Three-Phase Distribution Lines:** All available utilities with service in any of the three regions (*Source: Green Mountain Power, Swanton Village Electric Department, Vermont Electric Coop, and Village of Enosburg Falls*) were mapped.
- **Transportation Infrastructure:** These were removed in the initial analysis performed by VCGI. Does not include parking lots. (*Source: VCGI*)
- **VELCO Transmission Lines and Substations:** (*Source: VCGI*)
- **Water Bodies:** Major water bodies (i.e., >1 square kilometer in surface area) are shown on maps as "Lakes/Ponds." (*Source: VCGI*)

E. HYDRO GENERATION MAPS

KNOWN CONSTRAINTS

- None

REGIONALLY IDENTIFIED RESOURCES (REGIONAL POSSIBLE CONSTRAINTS)

- **National Scenic and Recreational Rivers:** Known constraint; Missisquoi and Trout Rivers. This constraint will only be incorporated into the Hydroelectric Resource Map. Dams occurring within an impacted area will be displayed as such on maps. (*Source: Digitized by the BCRC from Upper Missisquoi and Trout Rivers, Wild and Scenic Study Management Plan*)

POSSIBLE CONSTRAINTS

- **"303d" List of Stressed Waters:** Possible constraint. This constraint will only be incorporated into the Hydroelectric Resource Map. Dams occurring within an impacted area will be displayed as such on maps. (*Source: ANR*)
- **Impaired Water:** Possible constraint. This constraint will only be incorporated into the Hydroelectric Resource Map. Dams occurring within an impacted area will be displayed as such on maps. (*Source: ANR*)

- **State Significant Natural Communities and Rare, Threatened, and Endangered Species:** Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile. (*Source: VCGI*)

OTHER MAP FEATURES

- **Three-Phase Distribution Lines:** All available utilities with service in any of the three regions (*Source: Green Mountain Power, Swanton Village Electric Department, Vermont Electric Coop, and Village of Enosburg Falls*) were mapped.
- **Transportation Infrastructure:** These were removed in the initial analysis performed by VCGI. Parking lots are not included. (*Source: VCGI*)
- **VELCO Transmission Lines and Substations:** (*Source: VCGI*)
- **Water Bodies:** Major water bodies (i.e., >1 square kilometer in surface area) are shown on maps as "Lakes/Ponds." (*Source: VCGI*)

F. EXPLANATION OF MUNICIPAL CONSERVATION LAND USE AREAS

The NRPC conducted an analysis of municipal conservation land use area. The analysis reviewed the written descriptions of conservation land use areas from each municipal plan in the region. The intent of the analysis was to see if the conservation land use areas contained language that restricted future development (including the development of renewables). After review, the conservation land use areas from each municipal plan were divided into the following categories:

STRONGLY DETERS

These conservation land uses areas use language that prohibits development or only permits limited, low-density residential development. These areas are included as Regional Known Constraints on the Regional Energy Generation maps. Municipal conservation land use areas that meet this description include:

- Alburgh Town & Village – Conservation Land A
- Enosburgh – Conservation District
- Enosburgh Falls – Conservation District
- Fletcher – Forest District
- Fletcher – Conservation District
- Franklin- Conservation District
- Grand Isle – Off-Shore Island District
- Montgomery – Conservation District II
- North Hero – Conservation District
- Richford – Recreation/Conservation District and Water Supply District
- St. Albans Town – Conservation District

DETERS

Several conservation land use areas in the region are described in municipal plans as areas where land use shall be restricted to conservation, forestry, and agricultural uses and/or are described as land that is geographically unsuitable for development. These areas are included as Regional Possible Constraints on the Regional Energy Generation maps. Municipal conservation land use areas that meet this description include:

- Alburgh Town and Village – Conservation Land B
- Bakersfield – Conservation District
- Fairfax – Conservation District
- Fairfield – Uplands District
- Fairfield – Pond & Swamp District
- Highgate – Forest Reserve District

- Highgate – Protected District
- Montgomery – Conservation District I
- Richford - Forest/Conservation District
- Sheldon – Rural Lands II
- Swanton Town and Village – Conservation District

NEUTRAL

These conservation land use areas may be identified in municipal plans as being geographically or topologically unsuitable for development, yet contain language that allows for some types of development. These areas have not been included on the Regional Energy Generation maps. Municipal conservation land use areas that meet this description include:

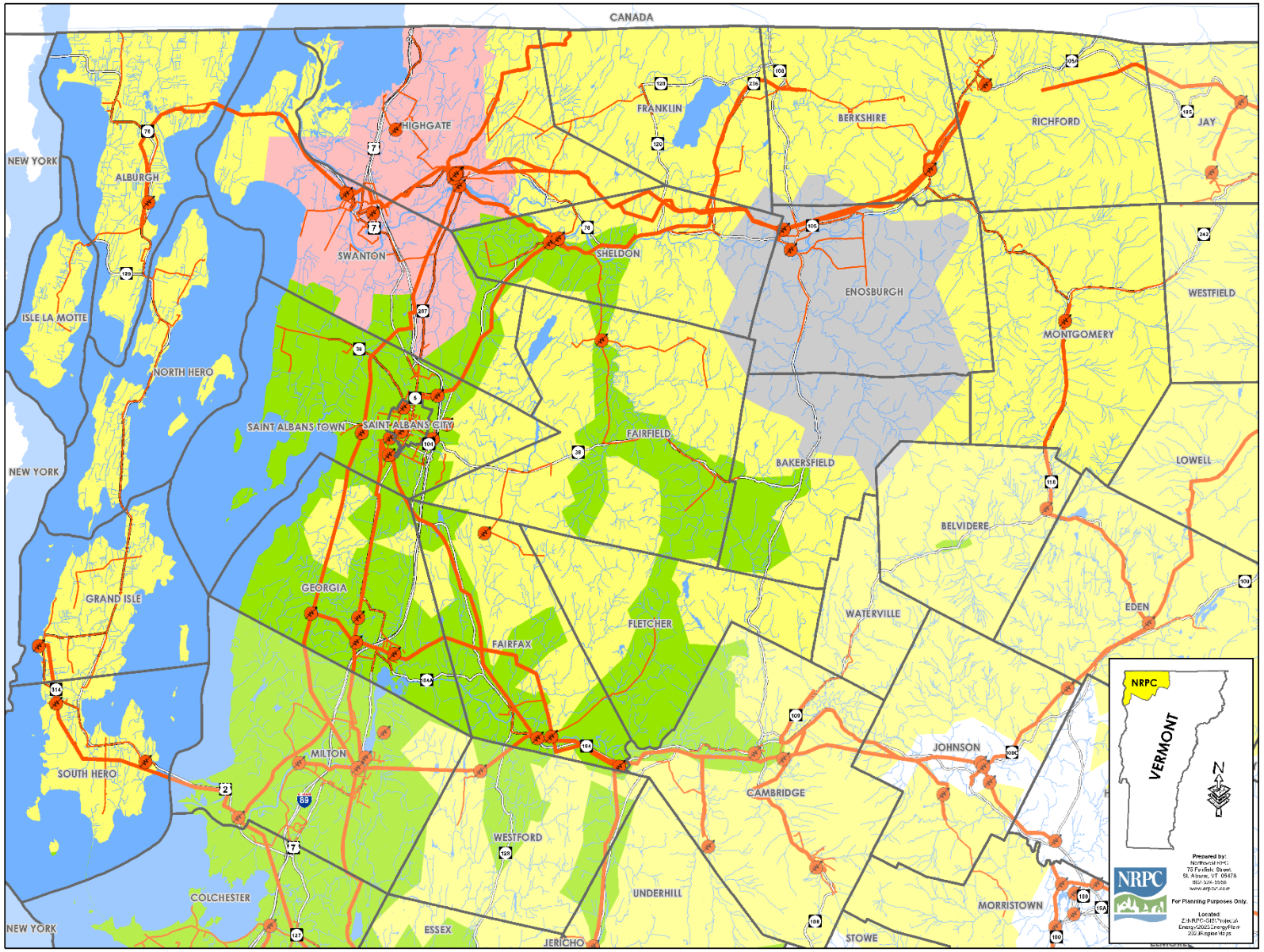
- Berkshire – Conservation District
- Georgia – Natural Areas District
- Georgia – Recreation District
- South Hero – Conservation District

DEVELOPMENT MAY OCCUR

These conservation land use areas do not contain language that restricts development. These areas have not been included on the Regional Energy Generation maps. No municipal conservation land use areas currently meet that description.

APPENDIX C

APPENDIX C - REGIONAL GENERATION MAPS



Utility Service Areas

Northwest Region, VT
Act 174
Energy Development Improvement Act

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. This may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site-specific investigation for a proposed facility and cannot be used as "siting maps."

Legend

- Substation
- 3 Phase Power Line
- Transmission Line

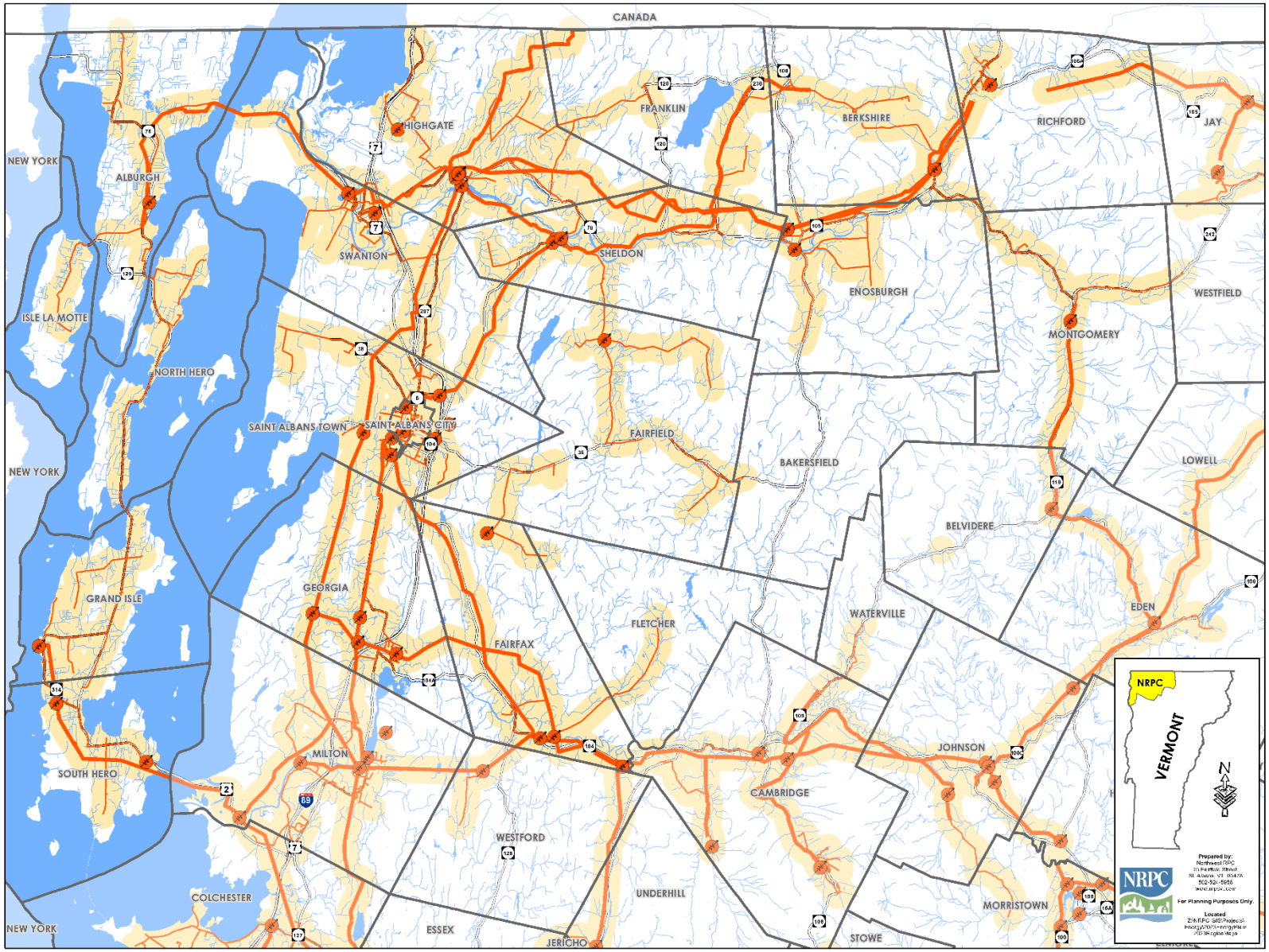
Utility Service Area Features

- Green Mountain Power
- Swanton Village Electric
- Vermont Electric Co-op
- Enosburg Falls Electric

Sources: VCGI

Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on the ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.

0 1 2 3 4 Miles



Transmission and 3 Phase Power Infrastructure

Northwest Region, VT
Act 174
Energy Development Improvement Act

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Legend

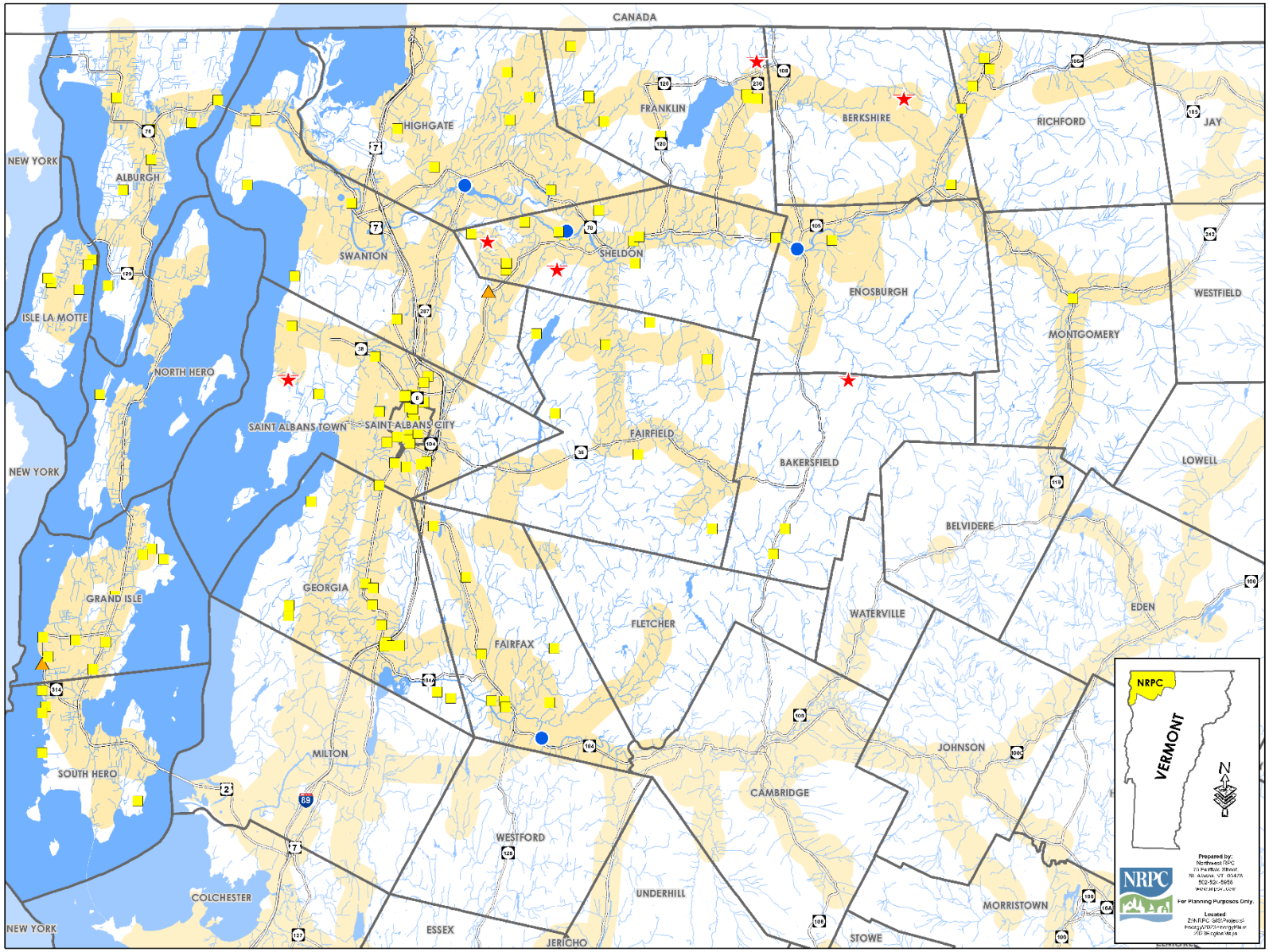
- Substation
- 3 Phase Power Line
- Transmission Line
- 1/2 Mile Buffer* (3 Phase Power Line & Transmission Line)

*The half mile buffer shows where generation facilities can be located without significant loss of power in transit to transmission lines.

Sources: VCGI

Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on the ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.

0 1 2 3 4 Miles



Existing Generation Facilities

Northwest Region, VT
Act 174
Energy Development Improvement Act

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. This may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site-specific investigation for a proposed facility and cannot be used as a "siting map."

Legend

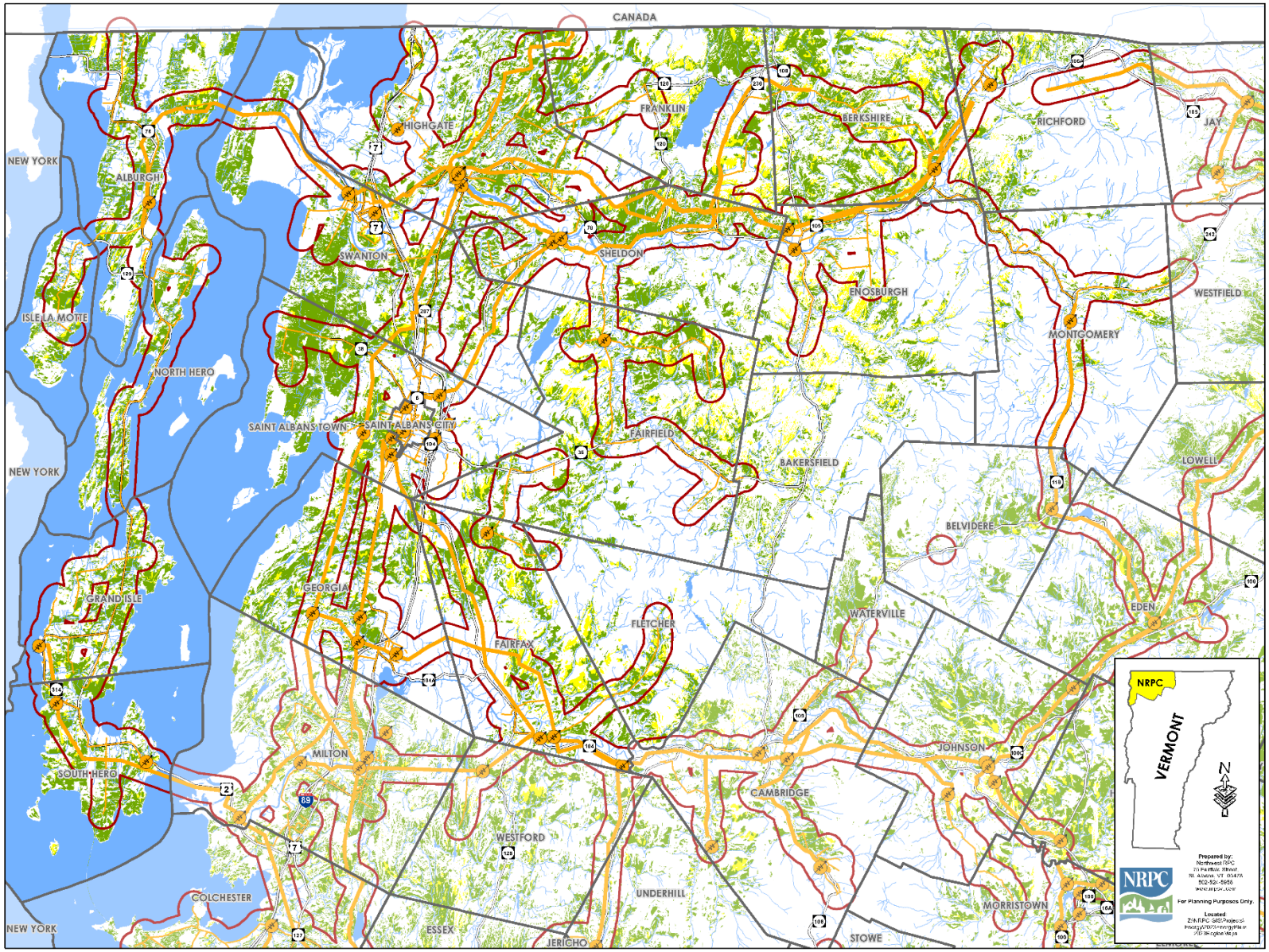
- Biomass Facility
- Hydro Facility
- Solar Facility
- Wind Facility
- 1/2 Mile Buffer* (3 Phase Power Line & Transmission Line)

Note: Only generators 15kW are shown on the map. A full list of all generators is available. The facility locations shown here are approximate and may not reflect exact location. Projects constructed after 2023 may not be shown.

*The half mile buffer shows where generation facilities can be located without significant loss of power in transit to transmission lines.

Sources: VCGI
Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for differentiation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.

0 1 2 3 4 Miles



Solar

Northwest Region, VT
Act 174
Energy Development Improvement Act

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. It may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site specific investigation for a proposed facility and cannot be used as "siting maps."

Legend

- Substation
- 3 Phase Power Line
- Transmission Line
- 1/2 Mile Buffer* (3 Phase Power Line & Transmission Line)
- Prime Solar/No Known Constraints
- Base Solar/Possible Constraints

*The half mile buffer shows where generation facilities can be located without significant loss of power in transit to transmission lines.

Sources: VCGI

Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on the ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.

Wind

Northwest Region, VT
Act 174
Energy Development Improvement Act

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Legend

- Substation
- 3 Phase Power Line
- Transmission Line
- 1/2 Mile Buffer* (3 Phase Power Line & Transmission Line)

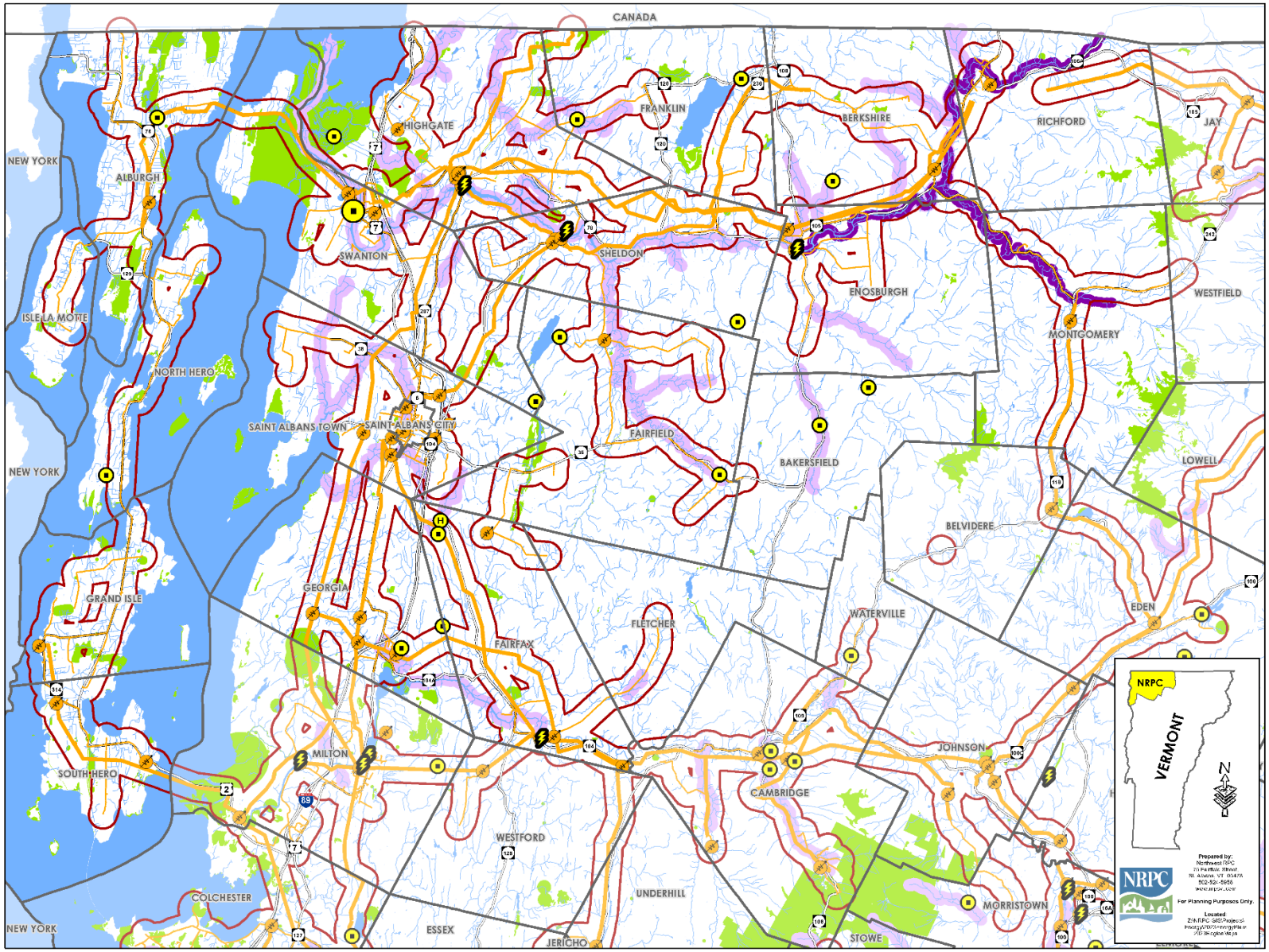
Prime Wind
Areas of high wind potential and no known constraints.
Darker areas have higher wind speeds.

Base Wind
Areas of high wind potential and a presence of possible constraints.
Darker areas have higher wind speeds.

*The half mile buffer shows where generation facilities can be located without significant loss of power in transit to transmission lines.

Sources: VCGI

Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.



Hydro

Northwest Region, VT
Act 174
Energy Development Improvement Act

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. This may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site specific investigation for a proposed facility and cannot be used as 'siting maps.'

Legend

- Substation
- 3 Phase Power Line
- Transmission Line
- 1/2 Mile Buffer* (3 Phase Power Line & Transmission Line)
- Designated Outstanding Resource Water
- Known Constraint - Designated National Wild & Scenic River
- Possible Constraint - Stressed or Impaired Water
- Possible Constraint - Rare & Irreplaceable Natural Areas

Potential Hydroelectric Facility

- < 50 kW Capacity
- > 50 kW Capacity
- High Hazard with < 50 kW Capacity
- High Hazard with > 50 kW Capacity

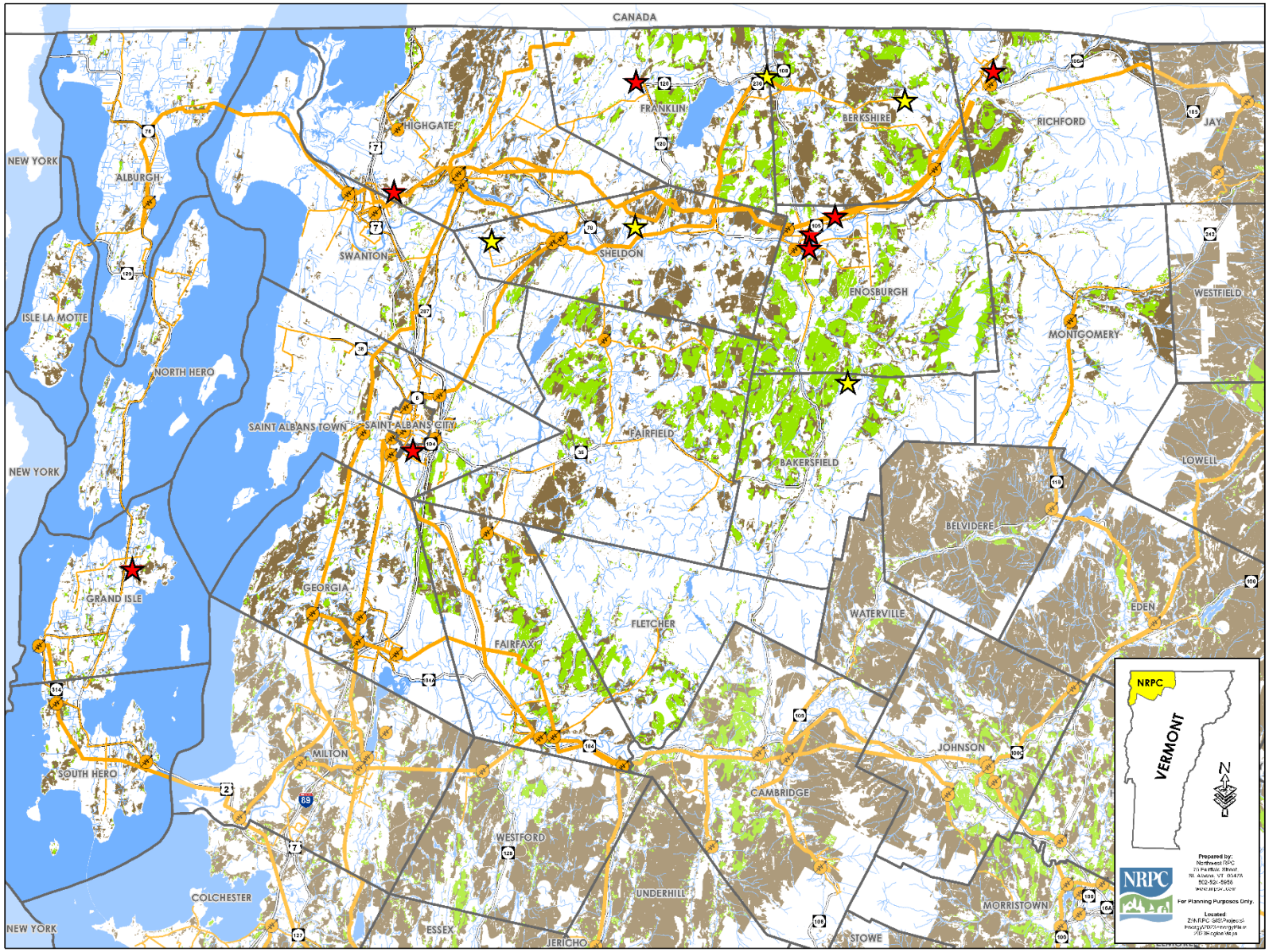
Operating Hydroelectric Facility

- Dam not on National Wild and Scenic River
- Dam on National Wild and Scenic River

*The half mile buffer shows where generation facilities can be located without significant loss of power in transit to transmission lines.

Sources: VCGI

Disclaimer: The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on the ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.



Woody Biomass

Northwest Region, VT
Act 174
Energy Development Improvement Act

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. This may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site-specific investigation for a proposed facility and cannot be used as "siting maps."

Legend

- Biomass System
- Methane Digester
- Substation
- 3 Phase Power Line
- Transmission Line
- Prime Woody Biomass/ No Known Constraints
- Base Woody Biomass/ Possible Constraints

Note: The prime and base biomass shows where biomass, specifically cordwood, could potentially be harvested. The location of biomass generation facilities, including methane digesters is more site specific and therefore does not have prime or

Sources: VCGI

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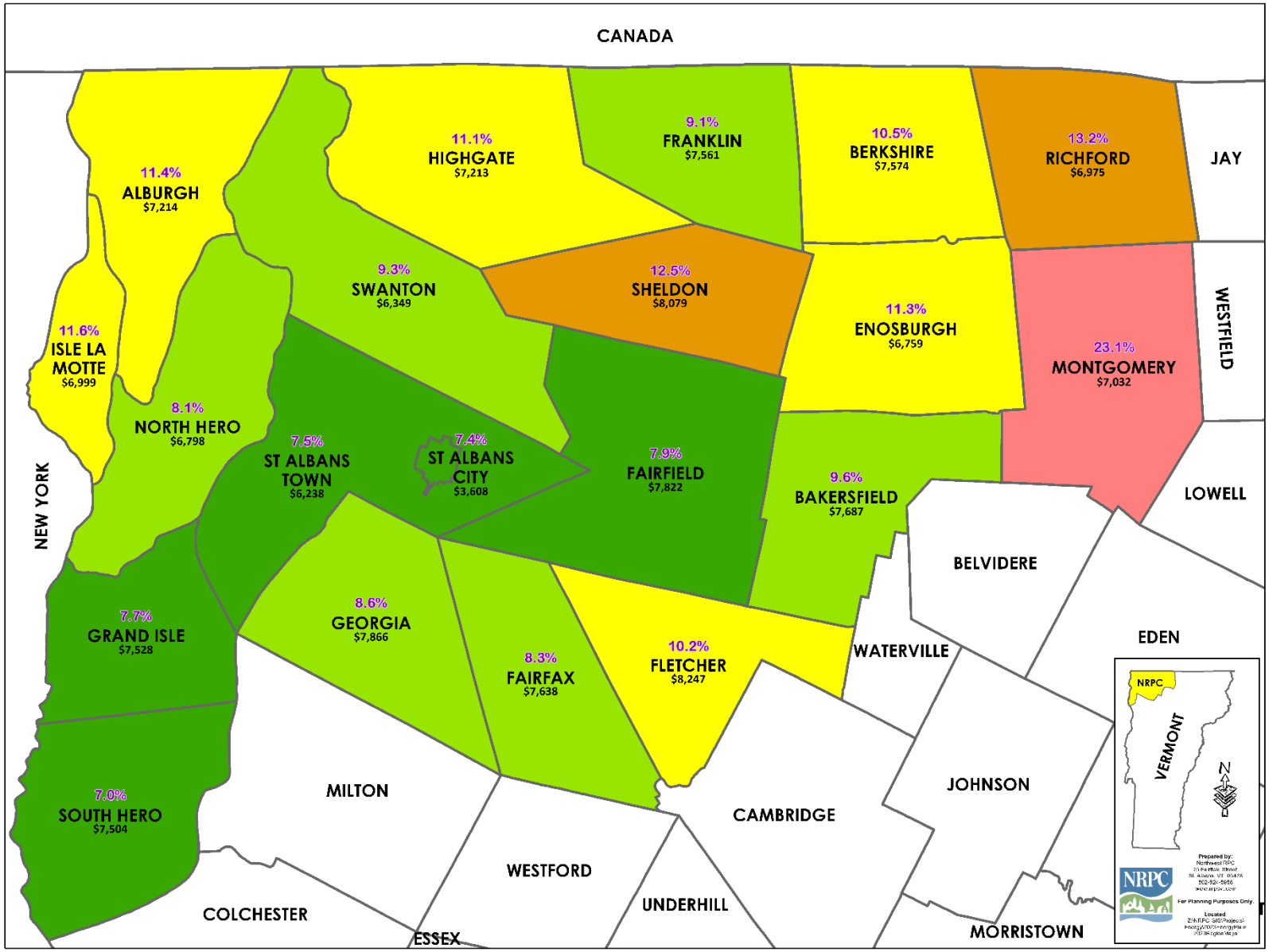
0 1 2 3 4 Miles



Energy Burden

Northwest Region, VT
Act 174
Energy Development Improvement Act

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Legend

0.0% Percent of Energy Burden

$0,000 Total Energy Spending

Energy Burden

- Up to 8%
- 8.1% to 10%
- 10.1% to 12%
- 12.1% to 15%
- More than 15%

Energy burden is the percentage of income spent on energy including transportation, heating, and electricity. This map shows average household energy burden by municipality. The data is for general context more than direct community or individual comparison.

Sources: Efficiency Vermont

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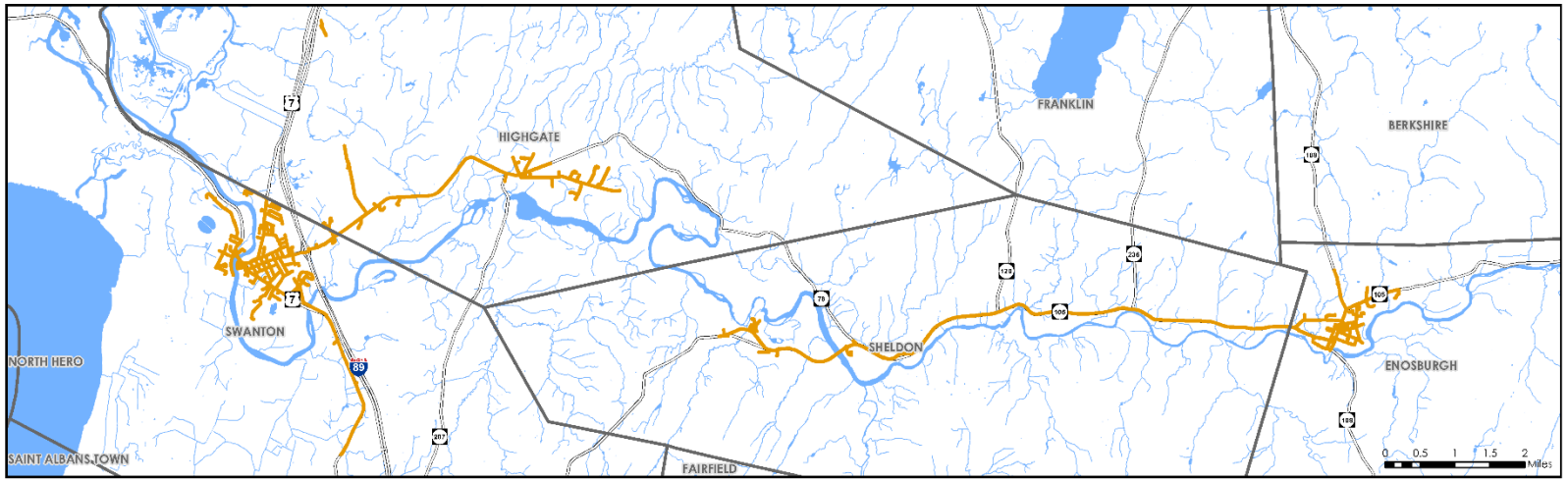

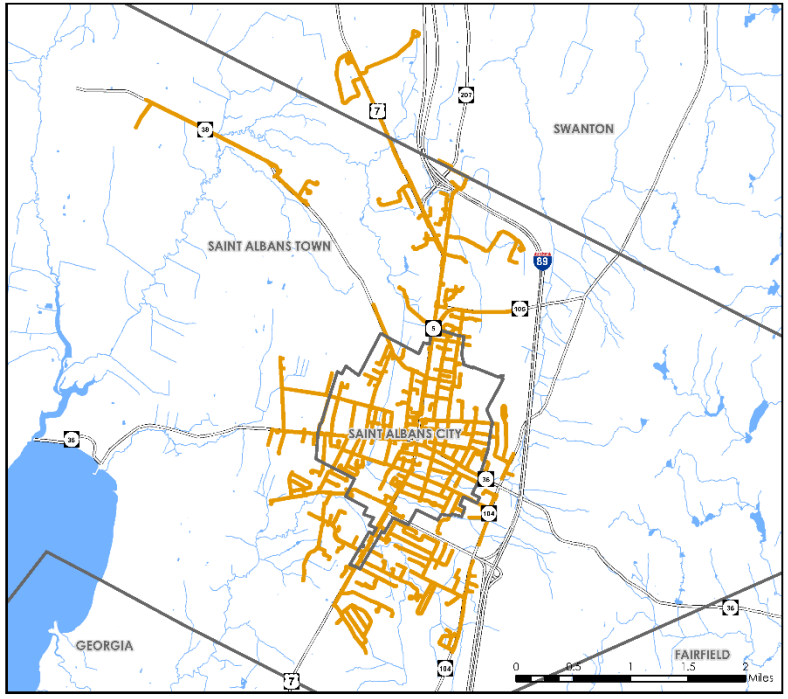

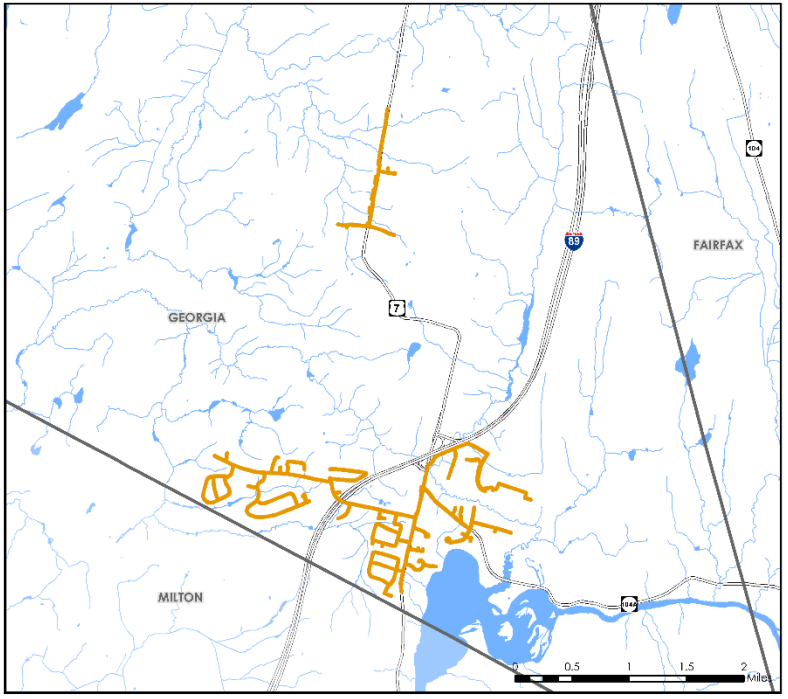

Natural Gas Lines

Northwest Region, VT
Act 174
Energy Development Improvement Act

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Legend

Natural Gas Line

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Prepared by:
Northwest RPC
75 Fairfield Street
St. Albans, VT 05478
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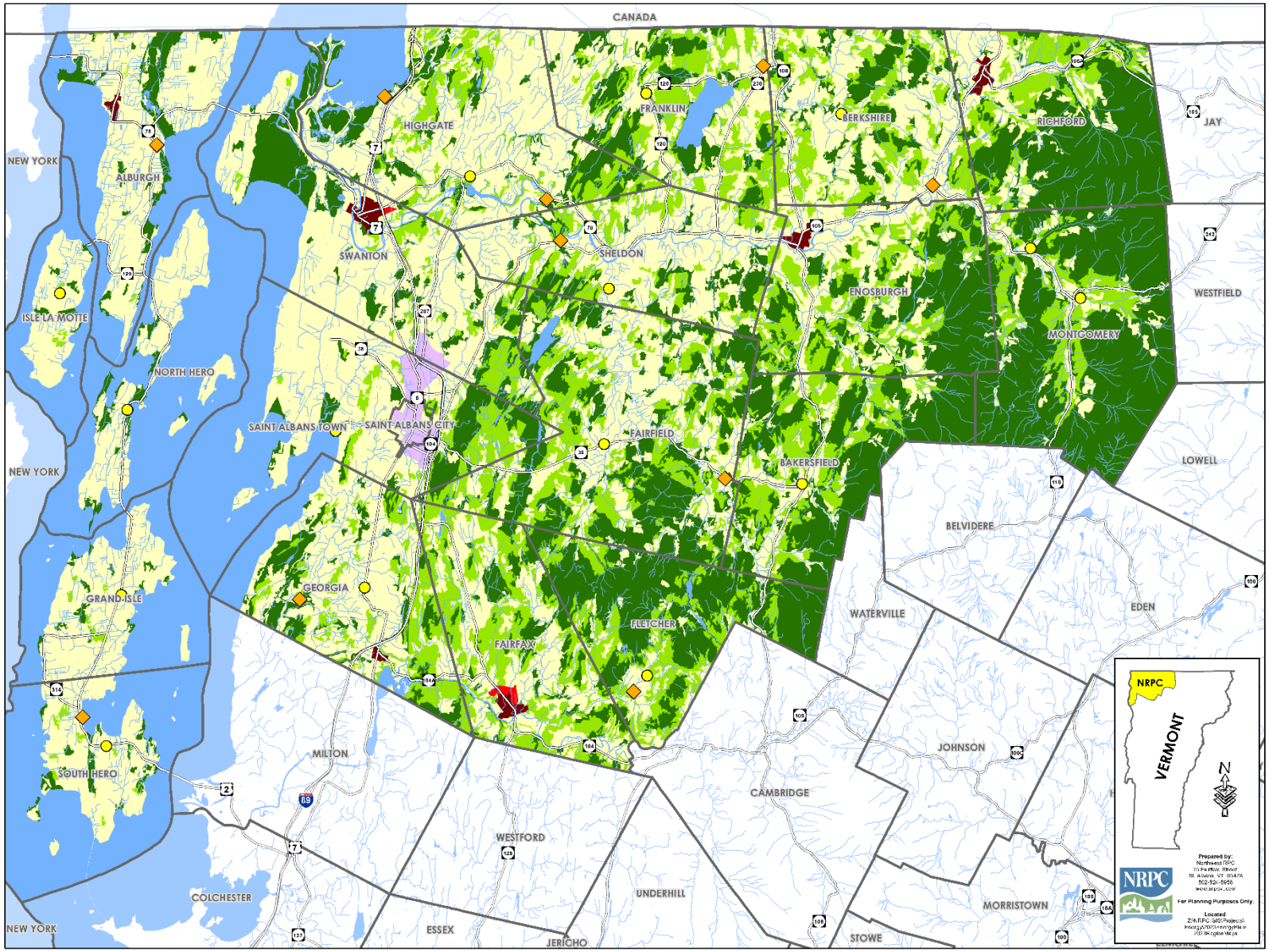
For Planning Purposes Only.

Located:
Z:\NRPC-GIS\Projects\Energy\2023\Energy-Plan-2023\Regional\Maps



Proposed Land Use

Northwest Region, VT
Act 174
Energy Development Improvement Act

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Legend

- Village
- Hamlet

Proposed Land Use Features

- Regional Growth Area
- Sub-Regional Growth Area
- Transitional Growth Area
- Agricultural Resource Planning Area
- Conservation & Forest Resource Planning Area
- Rural Planning Area

Sources: VCGI
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0 1 2 3 4 Miles

APPENDIX D

APPENDIX D - SUMMARY OF PLANNING APPROACH AND PROCESS

APPENDIX D - SUMMARY OF PLANNING APPROACH AND PROCESS

This plan is the result of more than two years of work completed by NRPC staff, NRPC commissioners, and various stakeholders throughout the region and the state. This plan builds on previous energy planning efforts in the region and the efforts of the Public Service Department.

The Northwest Regional Planning Commission Energy and Climate Committee was formed in early 2022 with a combination of existing commissioners and members of the public who applied to serve on the committee. Those applications were reviewed by staff and approved by NRPC's Personnel Committee. NRPC's Energy and Climate Committee started meeting in April 2022, and met monthly with a few breaks through May 2024. Agendas and minutes for these meetings can be found on NRPC's website (nrpcvt.com).

Public meetings are scheduled for the following dates and locations:

June 5th, 2024 at 8:30 a.m. - In-person Public Meeting at the Lake Champlain Islands Economic Development Office 3501 US Route 2, North Hero

June 13th at 7:00 p.m. - Virtual Public Meeting Via Zoom
https://us02web.zoom.us/j/89410414398?pwd=JSR7xXzHBYWCql1FZAbgJZPeuvMHev.1
Meeting ID: 894 1041 4398
Passcode: 825362
Phone in: 1(301)715-8592

June 18th at 5:00 p.m. - In-person Public Meeting at the Northwest Regional Planning Commission Office
75 Fairfield Street, St. Albans, VT

June 26th at 6:00 p.m. - NRPC Board Meeting, Public Invited, Stone House, St. Albans Town Bay Park

June 27th at 9:00 a.m. - Official Public Hearing (Hybrid) at Northwest Regional Planning Commission, 75 Fairfield Street, St. Albans, VT or
https://us02web.zoom.us/j/89410414398?pwd=JSR7xXzHBYWCql1FZAbgJZPeuvMHev.1
Meeting ID: 894 1041 4398
Passcode: 825362
Phone in: 1(301)715-8592

July 31st at 7:00 p.m. - NRPC Board Meeting, Official Public Hearing, Public invited
Virtual Meeting, Via Zoom, Final Public Hearing, Meeting ID 846 7249 5167
Physical Location- NRPC Office, 75 Fairfield St., St. Albans
https://us02web.zoom.us/j/84672495167
Phone in: 1(312)626-6799 or 1(646)558-8656

APPENDIX E

APPENDIX E - LISTS OF ACRONYMS

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- ACCD – Vermont Agency of Commerce and Community Development
- ACS – American Community Survey
- ANR – Vermont Agency of Natural Resources
- BCRC – Bennington County Regional Commission
- BERC – Biomass Energy Resource Center
- BTU – British thermal unit
- CAP – Climate Action Plan
- CBES – Commercial Building Energy Standards
- CCRPC – Chittenden County Regional Planning Commission
- CEP –Vermont Comprehensive Energy Plan
- C.I.D.E.R. - Champlain Islanders Developing Essential Resources
- CNG – compressed natural gas
- CPG – Certificate of Public Good
- CVOEO – Champlain Valley Office of Economic Opportunity
- DC – direct current
- EAN – Energy Action Network
- EEU –Energy Efficiency Utility
- EIA – Energy Information Administration
- EJ – Environmental Justice
- EPA – Environmental Protection Agency
- ESP – energy service provider
- EV – electric vehicle
- EVT – Efficiency Vermont
- FCIDC – Franklin County Industrial Development Corporation
- GMP – Green Mountain Power
- GMT – Green Mountain Transit
- GT – green tons
- kW – kilowatts
- LEAP – Long-range Energy Alternatives Planning
- LP(G) – liquefied petroleum gas (propane)
- NAICS - North American Industry Classification System
- NALG – net available low-grade growth (wood)
- NRPC – Northwest Regional Planning Commission
- NYPA – New York Power Authority
- MW – megawatts
- RBES – Residential Building Energy Standards
- REC – Renewable Energy Credit
- RINAs – rare and irreplaceable natural resources
- RPC - regional planning commission
- TES – Total Energy Study
- TPI – Transportation Planning Initiative
- TRORC – Two Rivers-Ottauquechee Regional Commission
- UST –underground storage tank
- VCGI – Vermont Center for Geographic Information
- VEC – Vermont Electric Cooperative
- VEIC – Vermont Energy Investment Corporation
- VELCO – Vermont Electric Power Company
- VMT – vehicle miles traveled
- VPPSA – Vermont Public Power Supply Authority
- VTrans – Vermont Agency of Transportation
- VY – Vermont Yankee

APPENDIX F

APPENDIX F - NORTHWEST REGION - EXISTING RENEWABLE GENERATION FACILITY SUMMARY

APPENDIX F - NORTHWEST REGION - EXISTING RENEWABLE GENERATION FACILITY SUMMARY

The following is a summary of all existing renewable generation facilities in the Northwest Region organized by municipality.

EXISTING REGIONAL GENERATION

Municipality	Solar Facilities	Solar Capacity (MW)	Wind Facilities	Wind Capacity (MW)	Hydro Facilities	Hydro Capacity (MW)	Anaerobic Digester Sites	Anaerobic Digester Capacity (MW)	Other Sites	Other Capacity (MW)
Alburgh	53	1.87	1	0.01	0	0.00	0	0.00	0	0.00
Bakersfield	34	0.26	0	0.00	0	0.00	1	0.40	0	0.00
Berkshire	14	0.13	0	0.00	0	0.00	1	0.60	0	0.00
Enosburgh	50	1.15	2	0.01	2	0.98	0	0.00	1	0.00
Fairfax	206	1.66	0	0.00	1	4.20	0	0.00	17	0.12
Fairfield	75	1.40	1	0.01	0	0.00	0	0.00	3	0.03
Fletcher	32	0.23	0	0.00	0	0.00	0	0.00	8	0.05
Franklin	48	0.53	0	0.00	0	0.00	1	0.19	1	0.01
Georgia	151	2.61	2	5.17	0	0.00	0	0.00	11	0.08
Grand Isle	109	6.50	0	0.00	0	0.00	0	0.00	20.8	0.00
Highgate	40	1.40	0	0.00	2	11.96	0	0.00	0	0.00
Isle La Motte	20	0.24	0	0.00	0	0.00	0	0.00	0	0.00
Montgomery	25	0.21	0	0.00	0	0.00	0	0.00	0	0.00
North Hero	34	0.23	0	0.00	0	0.00	0	0.00	0	0.00
Richford	29	0.32	1	0.01	0	0.00	1	0.60	1	0.01
St Albans City (Solar Only)	126	4.44	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
St Albans Town (Solar Only)	193	10.38	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
St. Albans	*N/A*	*N/A*	2	0.01	0	0.00	0	0.00	26	0.15
Sheldon	53	4.16	0	0.00	1	26.38	2	0.76	2	0.01
South Hero	108	0.84	1	0.00	0	0.00	0	0.00	1	0.01
Swanton	81	0.72	1	0.00	0	0.00	1	0.23	6	0.05

Source: Survey of distributed generation conducted by DPS, GMP St. Albans Solar Data, ANR Dam Generation Data, NRPC Corrections based on local permitting. Other sites includes battery storage systems and mixed solar/wind facilities.

APPENDIX G

APPENDIX G – Municipal Analysis Targets

APPENDIX G – Municipal Analysis Targets

NRPC will provide updated municipalized LEAP data by the end of 2024.