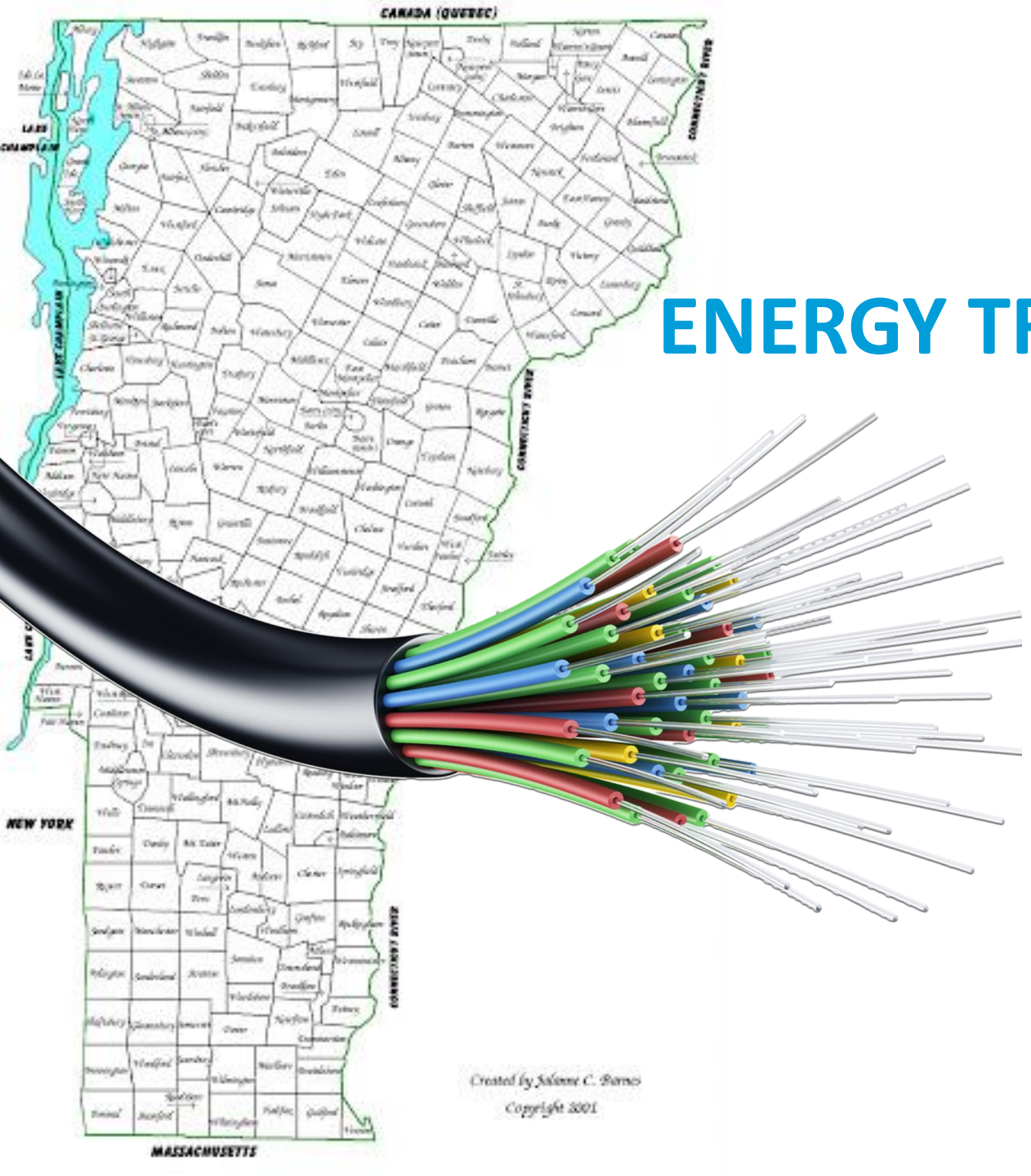

ENERGY TRANSFORMATION ENABLED BY BROADBAND ACCESS

Green Mountain Power

GMP – WHO WE ARE

- Serving 266,000 customers in 202 towns, covering 75% of Vermont
  - 85% residential customers, 15% business customers
- 15 offices across Vermont
  - Operations HQ in Rutland and Company HQ in Colchester
- 514 employees throughout the state, including 285 members of IBEW Local 300
- Energy Supply: 94% carbon free and 63% renewable
- Leveraging innovation to reduce costs and carbon for customers
  - In 2020, offset more then $3.2M by using stored energy in batteries
- First utility to earn B Corp certification
  - Meeting rigorous social, environmental, accountability, and transparency standards

VERMONT'S BROADBAND OPPORTUNITY IS LINKED TO CUTTING CARBON & COSTS

- Vermont has leading edge clean energy goals.
- Vermont's electric power supply is the cleanest in the country.
- Transportation (gasoline/diesel) and thermal heating/cooling of buildings (fuel oil, propane, etc.) produce Vermont's largest share of carbon emissions each year.
- Vermont energy policy (RES Tier 3) requires Vermont distribution utilities to enable their customers to transition off fossil fuels and onto clean electric through incentives and energy service programs.
- Clean energy technologies (such as battery storage systems, smart EV chargers, etc.) help empower customers to transition off fossil fuels and onto clean electric.
- Over the next decade, new clean energy technologies will emerge to spur even more fossil fuel reduction and clean electrification.
- Clean energy technologies deliver the most benefits when they are aggregated and choreographed through broadband connectivity. This cuts carbon and costs for all customers through peak management and added resiliency.
- Customer locations lacking adequate broadband are not able to participate in these types of clean energy technology programs, which inhibits Vermont realizing it full clean energy transformation.

Broadband Enables Full & Equitable Energy Transformation

CONNECTING UNDERSERVED BROADBAND LOCATIONS BENEFITS ELECTRIC CUSTOMERS

- **Energy System Benefits:**
  - Broadband can deliver ***energy services equity*** across all electric customers, giving equal access to all customers to participate in the benefits of GMP's energy services programs.
    - *Battery storage program; BYOD program; EV Charging program; future programs requiring energy device management thru telecommunications.*
  - Broadband can help ***reduce carbon emissions*** through more GMP customers participating in strategic electrification programs that eliminate fossil fuel use.
    - *The incremental electric load from reduces electric rates for customers*
  - Broadband can help ***lower power supply and regional peaking costs*** by expanding the number of GMP customers who can have Distributed Energy Resources (batteries, EV chargers, heat pumps, etc.) behind their meters that can be shared and managed during peak conditions.
  - Broadband can help ***lower operating costs*** by providing telecommunications alternatives for GMP over building our own, dedicated circuits for operations.
    - *Advanced Metering communications alternative in the future.*
- **Public Good benefits:**
  - Broadband can bring ***equal access to all Vermont locations for tele-health, remote education, remote working, etc***.

Broadband can Deliver Important Energy Benefits to Customers

VERMONT'S BROADBAND GAP & OPPORTUNITY

- The DPS study identified over 69,000 Vermont locations with internet connection speeds less than the FCC standard for broadband of 25/3 Mbps.
- After the 2020 Connectivity Initiative grants funded through the CARES Act and the FCC RDOF Auction results, almost 46,500 Vermont locations remain that do not have a clear path to being connected at the FCC standard.
- Approximately 54% of those locations are in GMP's service territory, or 25,110 locations.
- More than 7,500 of those locations have internet connections speeds below 4/1 Mbps, which is essentially unusable.

Speed Tier	GMP Locations	% of Locations
Less than 4/1 Mbps service	7,533	30%
At least 4/1 Mbps service but less than FCC standard of 25/3	17,577	70%
Total	**25,110**	**100%**

GMP CAN HELP WITH BROADBAND DEPLOYMENT: FOCUS ON MAKE-READY WORK

Make-ready work is required to accommodate a new communications attachment, such as optical fiber, to deliver broadband. The work typical consists of:

- Moving existing attachments to create necessary spacing
- Replacing utility poles so they can accommodate a new attachment

MAKE-READY CURRENTLY CAN BE AN OBSTACLE TO BROADBAND

- Make-ready is a significant cost element of broadband projects, typically representing approximately 10-25% of total project capital costs.
- Make-ready costs in Vermont vary widely from project to project, from as low as hundreds per mile to as high as tens of thousands per mile.
- Make-ready cost variation is dependent on:
  - The number of fiber miles needed to reach a location.
  - The age/vintage of the physical poles being attached to along the route.
  - Generally, remote locations require longer stretches of fiber attached to older/shorter poles along the route to those locations, which drives up project costs.
- Make-ready costs pose an obstacle to bringing broadband to the hardest-to-reach locations in Vermont.
  - GMP has been working with the Department on how we could offer help within the current regulatory and statutory framework to lower make ready costs to providers that commit to offer broadband to GMP customers without 4/1