

FY20 New Demonstration Projects



Presented By

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- **Projects that came online in FY20**
 1. Albuquerque Public Schools
 2. Alliant Energy
 3. Alaska Village Electric Cooperative
 4. City College of New York
 5. National Rural Electric Cooperative Association
 6. Vermont



Albuquerque Public Schools

- Location: Albuquerque, NM
- Project Duration: 3 Years
- Partners
 - Department of Energy Office of Electricity
 - Sandia National Laboratories
 - Albuquerque Public Schools
- Analysis type: Techno/economic, System Performance
- Application: Peak Shaving for commercial building
- ESS Size & Technology: 2000kWh (500KW with 4-hour duration)

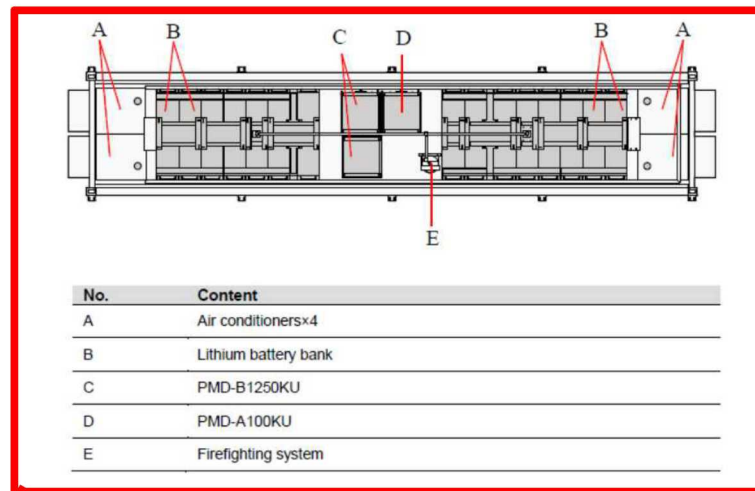


NATIONAL IMPACT

Cost benefit for educational facilities within New Mexico and similar state electric markets requiring resilient grid architectures

Alliant Energy

- Location: Decorah, IA
- Project Duration: 3 Years
- Partners
 - Department of Energy Office of Electricity
 - Alliant Energy
 - Sungrow
 - EnelX
 - Sandia National Laboratories
- Analysis type: Dynamic Voltage Support, System Performance
- Application: Voltage Support, Distribution Deferral, Renewable Time Shift
- ESS Size & Technology: 2.2MW / 2.8MWh Li-Ion

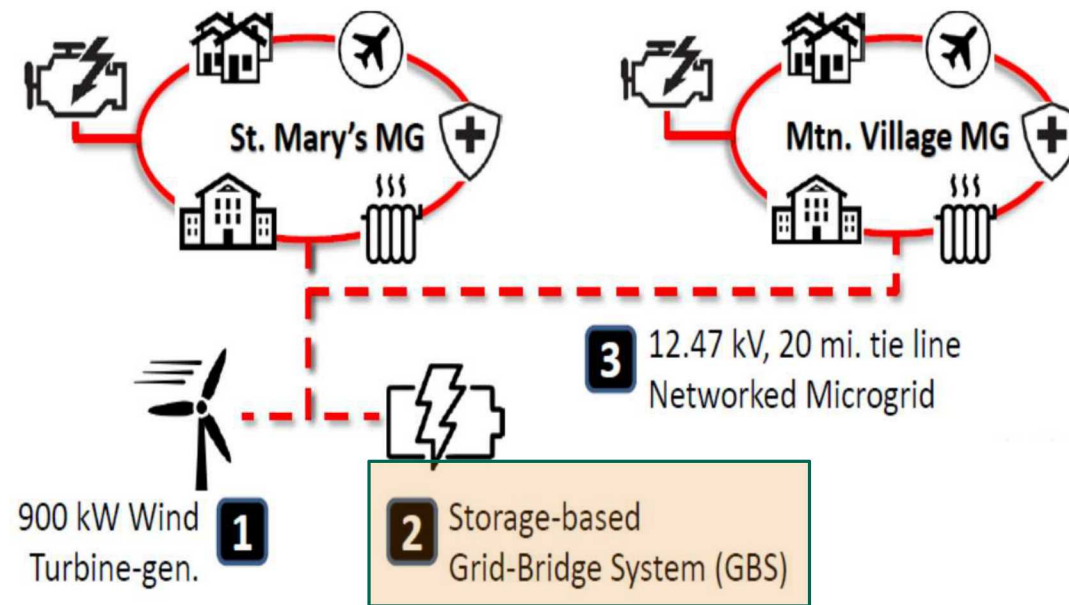


NATIONAL IMPACT

Increase renewable energy penetration for residential feeders to meet renewable mandates, enhance reliability and create resilient nodes

Alaska Village Electric Cooperative

- Location: Saint Marys, AK
- Project Duration: 3 Years
- Partners
 - Department of Energy Office of Electricity
 - Alaska Village Electric Cooperative
 - Alaska Center for Energy and Power
 - ABB
 - Sandia National Laboratories
- Analysis type: Dynamic Controls, System Performance
- Application: Grid Bridge System, Spinning Reserve
- ESS Size & Technology: 1MW / 250kWh Lithium



Dan Ton, "Microgrid R&D Program at the U.S. DOE", Advanced Grid Research, November 2018

- Three-stage plan to lower costs and increase reliability and resilience
- 1.) Wind turbine-generator to reduce fuel use
 - 2.) **Storage-based grid bridge system (GBS) for spinning reserve**
 - 3.) Network St. Mary's microgrid with Mountain Village microgrid via 12.47 kV tie-line

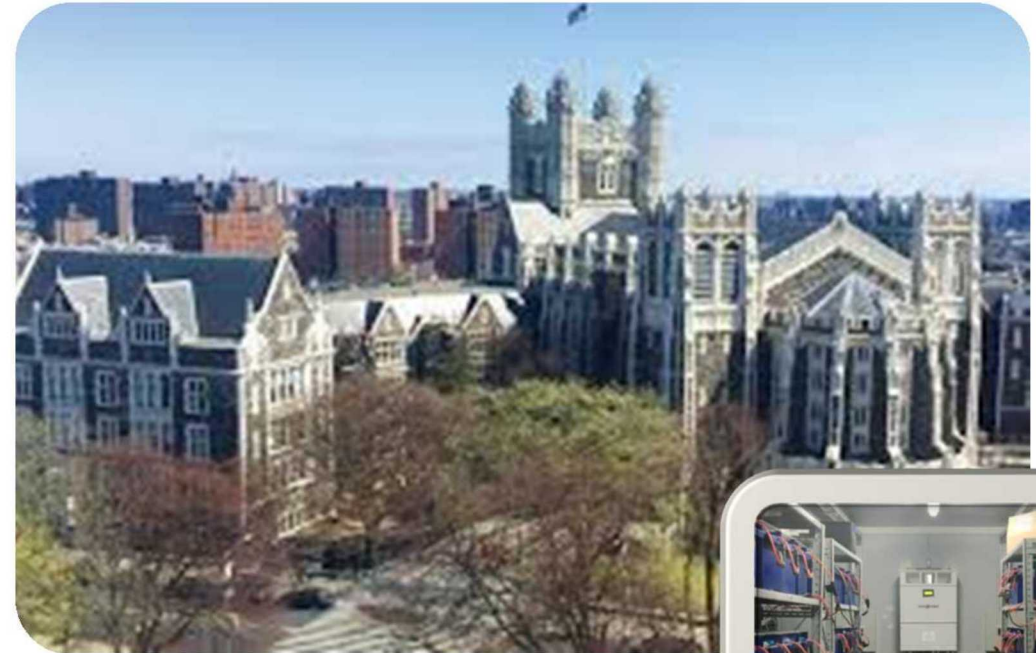
GOAL IS TO RUN IN DIESELS_OFF MODE

NATIONAL IMPACT

Demonstrate the use of an ESS bridging two microgrids to optimize energy operation and reduce fossil fuel consumption and dependence

City College of New York

- Location: New York, NY
- Project Duration: 2 Years
- Partners
 - Department of Energy Office of Electricity
 - City College of New York
 - Urban Electric Power
 - Sandia National Laboratories
- Analysis type: System Performance
- Application: Peak Shaving
- ESS Size & Technology: 50kW / 160kWh UEP ZnMnO

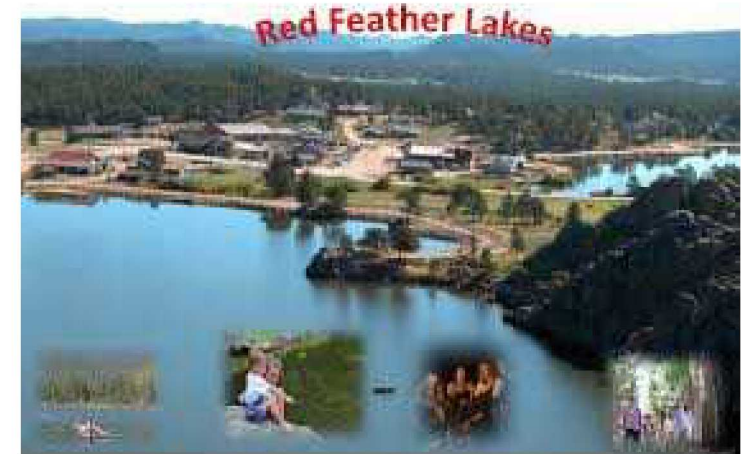


NATIONAL IMPACT

Develop rechargeable ZnMnO energy storage systems to replace traditional lead acid batteries providing cheaper capex, higher operating range and increased life cycle to consumers

National Rural Electric Cooperative Association

- Locations: Colorado, North Carolina
- Project Duration: 3 Years
- Partners
 - Department of Energy Office of Electricity
 - National Rural Electric Cooperative Association
 - Poudre Valley Electric
 - Sandhills Utility
 - Sandia National Laboratories
 - Pacific Northwest National Laboratory
 - Lawrence Livermore National Laboratory
- Analysis type: Techno-Economic, System Performance
- Application: Peak Shaving, Resilient Power, Microgrid

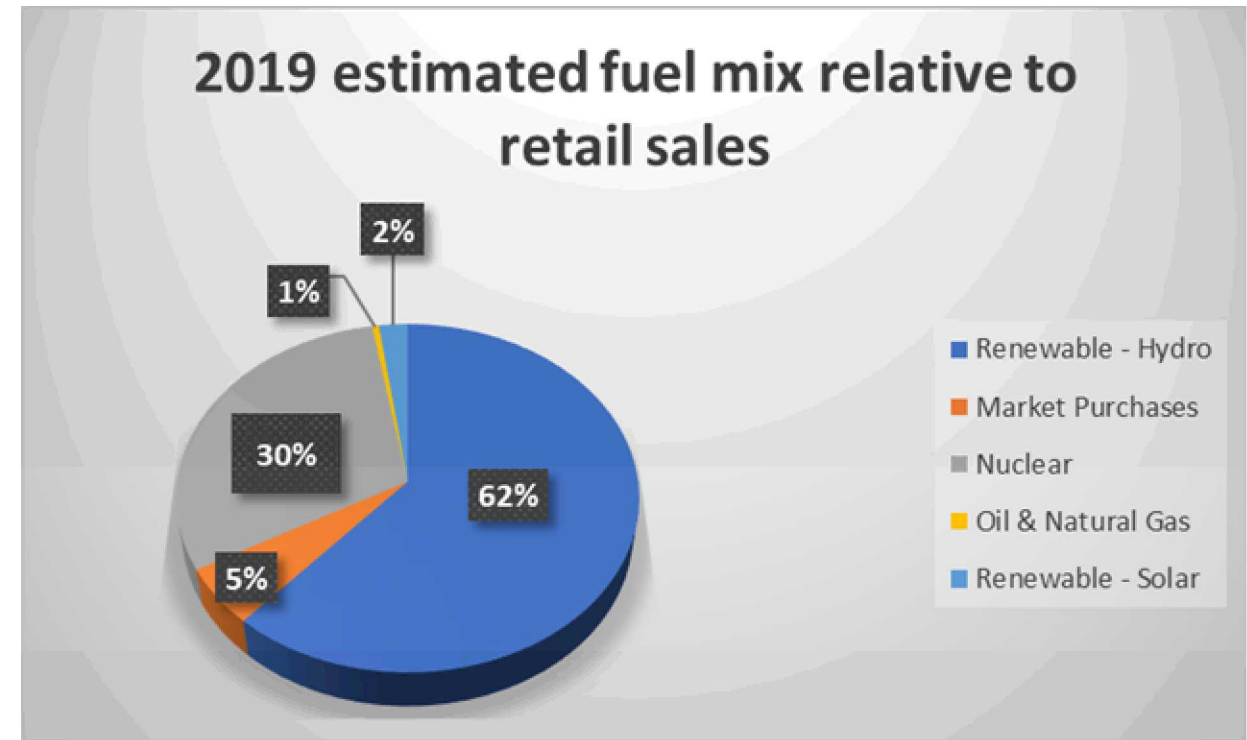


NATIONAL IMPACT

Demonstrate the economic and resilient benefits of an energy storage system integrated into a rural electric cooperative which serves rural critical and defense energy infrastructures

Vermont

- Locations: Colorado, Northern Vermont
- Project Duration: 3 Years
- Partners
 - Department of Energy Office of Electricity
 - Green Mountain Power
 - Vermont Electric Cooperative
 - Lawrence Livermore National Laboratory
- Analysis type: System Performance
- Application: Peak shaving, Transmission deferral
- ESS Size & Technology: 5MW / 20MWh

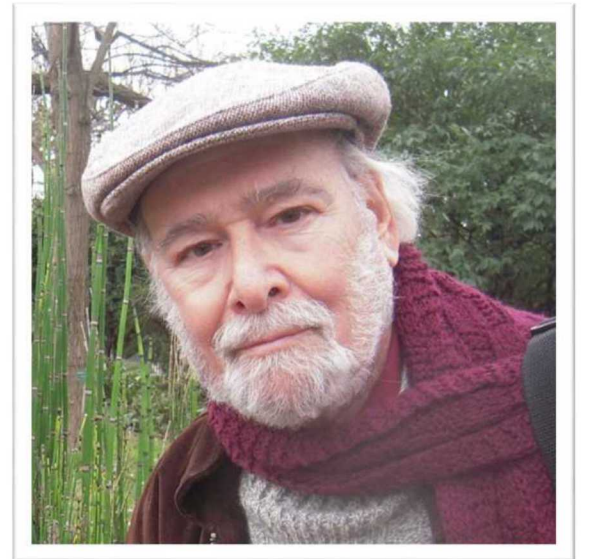


Green Mountain Power Commitment
100% Carbon free by 2025
100% Renewable by 2030

NATIONAL IMPACT

Increase the capacity of existing transmission lines to deliver electrical power from areas abundant in renewable energy sources to dense populated areas

Thank you to **Dr. Imre Gyuk** (Director of Energy Storage Research at the Department of Energy Office of Electricity) for the support and direction that has made energy storage what it is today.



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