Planning for Energy Efficient Housing in Native Communities

An Organizational and Community Approach

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Akwesasne Housing Authority
Contiguous Mohawk Community spanning parts of:

- one state (NY)
- two provinces (ON & PQ)
- two countries (US, CA).
AHA - The Mission:

“"The mission of the Akwesasne Housing Authority and the St Regis Mohawk Tribe is to develop a comprehensive housing program that will address the needs of all Mohawks living on and around our designated Indian area. We will seek to generate and promote community strength and prosperity through safe housing, supportive ventures, economic development, and program efficiency. In the spirit of this mission, we will strive to protect and educate our future generations.”
Accomplishments:

- Awarded 14 Development Project awards under the HUD 1937 Housing Act. Individual grants ranged from $45,000 to $4 million.
- 4 Comprehensive Improvement Assistance Program grants.
- Received 21 NAHASDA Block Grants (Years 1998 - 2019) in excess of $40 million.
- Community Cooperative Projects including a 12-bed Tribal Foster Care Facility, leveraging/contribution of monies for participation in the St. Regis Mohawk Tribe Water Enhancement Project.
- Created a HUD initiated program, the Akwesasne Neighborhood Networks Computer Learning Center, which was the first of its kind ever established in Indian Country, accomplished within two months and a startup budget of $89,000.
- Administration of new Tenant Assistance program for low income families residing on and near the St. Regis Mohawk Reservation.
- Creation of the Akwesasne Boys & Girls Club, established to provide exciting opportunities for children of all backgrounds (2001).
- Additional facility and office space to the Partridge House, an in-house drug and alcohol rehabilitation facility.
- 2005 Construction of the new senior citizen center, using leveraged funds from the St. Regis Mohawk Tribe, United States Department of Agriculture (USDA), and the St. Regis Mohawk Office for the Aging, Bingo Palace, Casino and various community fundraising events.
- Construction of Sunrise Acres Phase 1 (1998) and Phase 2 (2012)
- Leveraged $1.8 million IHBG, Non-Program, and fundraising dollars toward the Diabetes Center of Excellence (2014).
AHA’s Path to Green

In recent years, the Akwesasne Housing Authority has been implementing Sustainable Design Practices and Renewable Energy on all of its projects as a matter of policy. It has also been advocating for similar policies in the broader Akwesasne Community.

Thinking as a Community
Energy Philosophies

10 Year Tribal Strategic Energy Plan

Created By

Akwesasne St Regis Mohawk Tribe

June 2 - 4, 2015
Akwesasne St. Regis Mohawk Tribal Casino Resort
Hogansburg, New York

Strategic Energy Plan

Facilitated and documented for DOE IE/TEP
through Sandia National Laboratories by

Indigenous Collaboration

[Diagram: Developing and implementing a regulatory framework for energy, gathering data that demonstrates the need and identifies our assets and resources, targeting messaging to promote our energy vision, achievable goals, and benefits, demonstrating and encouraging best practices and successes of our energy vision]
Akwesasne Housing Authority's  
Sunrise Acres Senior Low-Income Housing

Phase 1 – 1998, conventional construction

Phase 2 – 2011 Sustainable Design, Solar PV, geo-thermal, sustainable materials, etc.

Sunrise Acres Phase 2 Expansion

- Funded by HUD's Native American Housing Block Grant Program

- Project Goals:
  - 20 - 2 Bedroom Apartments
  - Training Space for AHA & Community Groups
  - On Site management Office
  - “Sustainable design strategies will be employed where agreed to be practical and cost effective.”
Sunrise Acres Phase 2 Implementation

- Constructed in 2012 adjacent to Phase 1 Complex
- 5 Single Story 4 Unit Apartment Buildings (4,356 ft² each)
- 1 Training Center (5,952 ft²) containing office and meeting space
- Sustainable Design Elements (Solar & Geothermal)
Energy Efficient Building Envelope

- Insulated Concrete Form (ICF) Construction for Walls & Foundation - R20
- Traditional pre-engineered wood truss roof - R40
- Fully insulated concrete slab floors – R10
- Windows – Double Hung, Anderson 400 Series, Argon gas filled Low E, U=0.41
Geothermal System

- Apartments – 7 wells, 400 ‘each
- Training Center – 9 wells, 400' each
- 44 wells total, +/- 7 miles of tubing
- Provides both heating and cooling
- Very Efficient – EER 16-26, COP 3.2-4.1
- Provides seasonal energy storage - Injects heat into the ground in the summer for use for heating in winter
Photovoltaic System

- 6 ground mounted arrays – 30 kW Total
- Training Center – 5 kW
- 5 Apartment Bldgs – 5 kW each
- Net metering
- Provides approximately 20% of electrical energy consumed by
Solar Thermal System

- Evacuated Tube Heat-Pipe Collectors
- 2 panels per building – 45 ft² each
- Provides approximately 50% of hot water demand
- When hot water is not required, excess heat is injected into geothermal loop (stored in the ground for use in heating)
Energy Efficient HVAC System

- Geothermal WW Heatpump/Radiant Floor in Apts
- Geothermal WA Heatpumps in Training Center
- Energy Recovery Ventilators (ERV) recover 50% of energy from exhaust to preheat ventilation air
- DDC Controls
Energy Efficient Lighting

- Fluorescent & Compact Fluorescent Lighting
- Solar Daylighting Tubes in Training Center corridors and Apartment Bathrooms
- Occupancy sensors (Training Center)
- Led Exterior lighting with Photo-eye control
Locally milled woodwork
Compared with Phase 1 Apartments

Energy Savings: 25 kBTU/SF/Yr vs. 62 kBTU/SF/Yr (Phase I)
= 60% Energy Savings

Cost Savings: $1.01/SF/Yr vs. $2.06/SF/Yr (Phase I)
= 51% Cost Savings
Sunrise Acres Phase 3 Expansion

- Funded by:
  - New York State Homes and Community Renewal (HCR)
  - Office of Temporary and Disability Assistance (OTDA) Homeless Housing and Assistance Program (HHAP)
  - Federal Home Loan Bank – AHP
  - HUD IHBG and ICDBG Programs
  - NYSERDA – Lo-rise New Construction Program, National Green Building Standards
Project Goals:

- Two new Buildings adjacent to Phase 1
- Seniors Building – 12 Supportive Housing apartments with common spaces including Kitchen, Community Room, Laundry Room, Offices and Library
- Veterans Building – 6 apartments and common space including Lounge, Laundry and Offices.
- Sustainable Design Strategies will include Off-site Solar PV with net metering and Biomass Heating System (Seniors Bldg)
- Silver LEEDS Certified
- Construction in 2019 – 80% complete
- Rent ups October 1st
Sunrise Planning Canvas:
Saint Regis Mohawk Tribe Support

- Tribe allowed allocation of additional acreage to expand Sunrise Acres for this project.
- BIA leasing, significant legal workings between AHA, SRMT, BIA, State Agencies
- Environmental Division – provided guidance on the environmentals – included 2/1, wetlands encroachment process (AHA used 1.25 acres of wetlands).
Veterans (6 Unit) Supportive Housing Progress
Communal Space with back porch.
Rear patio and view of unit back porch
Senior (12-unit) Supportive Housing Progress
An Important Collaborative Tie-In:
Akwesasne Housing Authority
“Go Solar!” Initiative

• Funded from US Department of Energy/Office of Indian Energy, HUD’s Indian Community Development Block Grant (ICDBG) Program, NYSERDA, and AHA’s IHBG Program
  - Will achieve NET ZERO in AHA’s facilities
  - Will assist LMI families with solar credits, lessening their housing burden
  - Clean-green
  - Educational opportunities for families and children
A plan to supplement power usage of the AHA, etc.

- Initial 275 kW Array for offsetting energy use at Sunrise Acres via net-metering.
- Addition 800 kW Array to Offset LMI family energy costs and other properties.
- Remainder of 25 Acre site to be developed as Solar Farm for net metering other community/government organizations (future)
- Project site donated by the Saint Regis Mohawk Tribe
- Goals are to achieve net zero for all of Sunrise Acres facilities and to assist LMI families subscribe to solar power energy, bringing 30-50% savings to their energy bills.
- Integrated with 2 NYSERDA programs, families can add to their savings by accessing energy efficiency upgrades. AHA used IHBG and ICDBG resources for the AHA High Energy-Efficiency Initiative Program (HEEIP).
- HEEIP is also assisting the Akwesasne Boys & Girls Club to achieve net zero, saving significant dollars that can be turned back to their critical youth programming.
- The plan is to replicate this model for other tribal entities and agencies of the tribe.
Energy Efficiency Planning for new construction works!

- Create the foundation for energy efficiency goals
  - Energy Strategic Planning
  - Talk with agencies within the tribe for their “energy wish lists”
  - Spark the conversation
- Think OUTSIDE THE BOX (diversify funding)
  - Look for “new” and “never before” resources.
  - You will find that this GROWS LEGS – Agencies WANT to work with tribes (sometimes they never considered it)
- WHY HOUSING? Housing is the single most “noticeable” community development tribal program with the greatest potential to assist the WHOLE community!
- Future: Financing of Solar Installs for single-family housing.
- The SKY is the limit!
Partners – A Community and National Effort:

- U.S. Department of Housing and Urban Development
- New York State Homes & Community Renewal
- St. Regis Mohawk Tribe
- U.S. Department of Energy
- Federal Home Loan Bank
- Office of Temporary and Disability Assistance
- NYSERDA
- Sandia National Laboratories
- beardsley architects + engineers
- NREL
Questions?

Thank you.

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Contact me for a copy of this presentation.

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