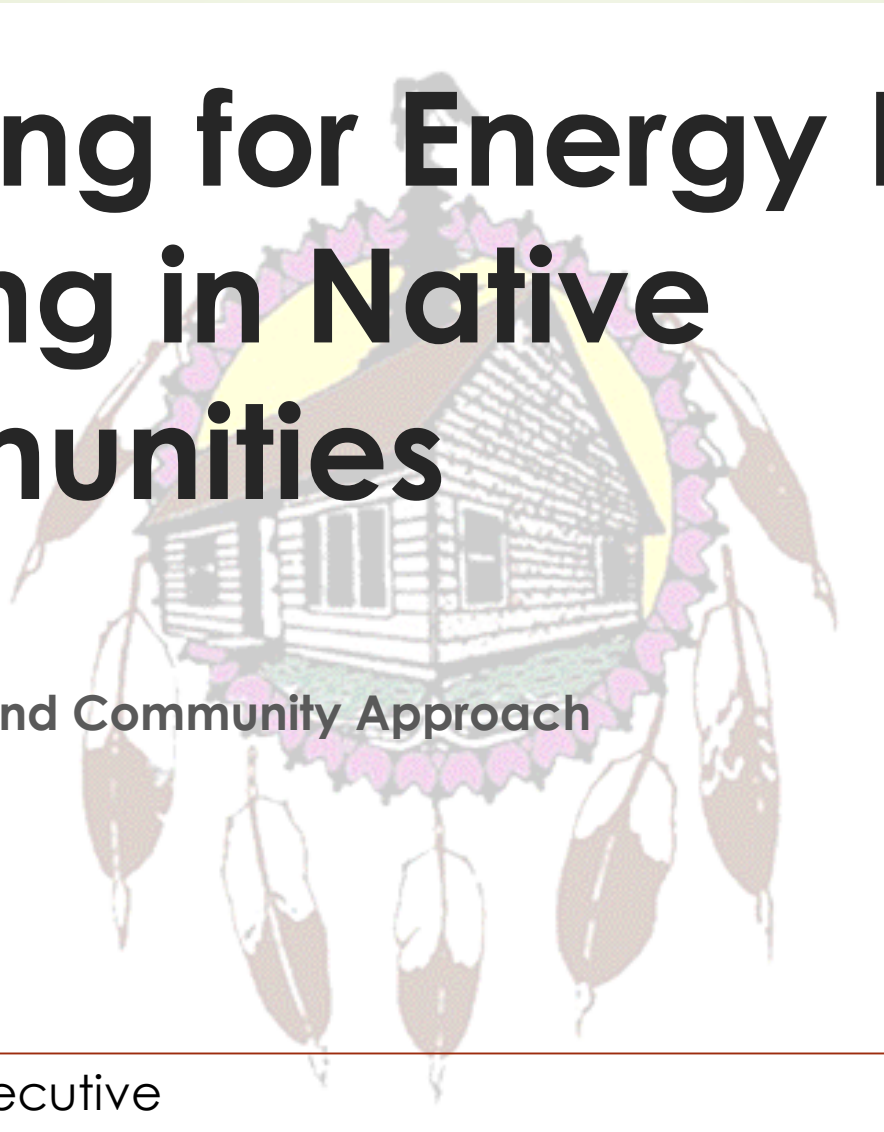


# Planning for Energy Efficient Housing in Native Communities

An Organizational and Community Approach



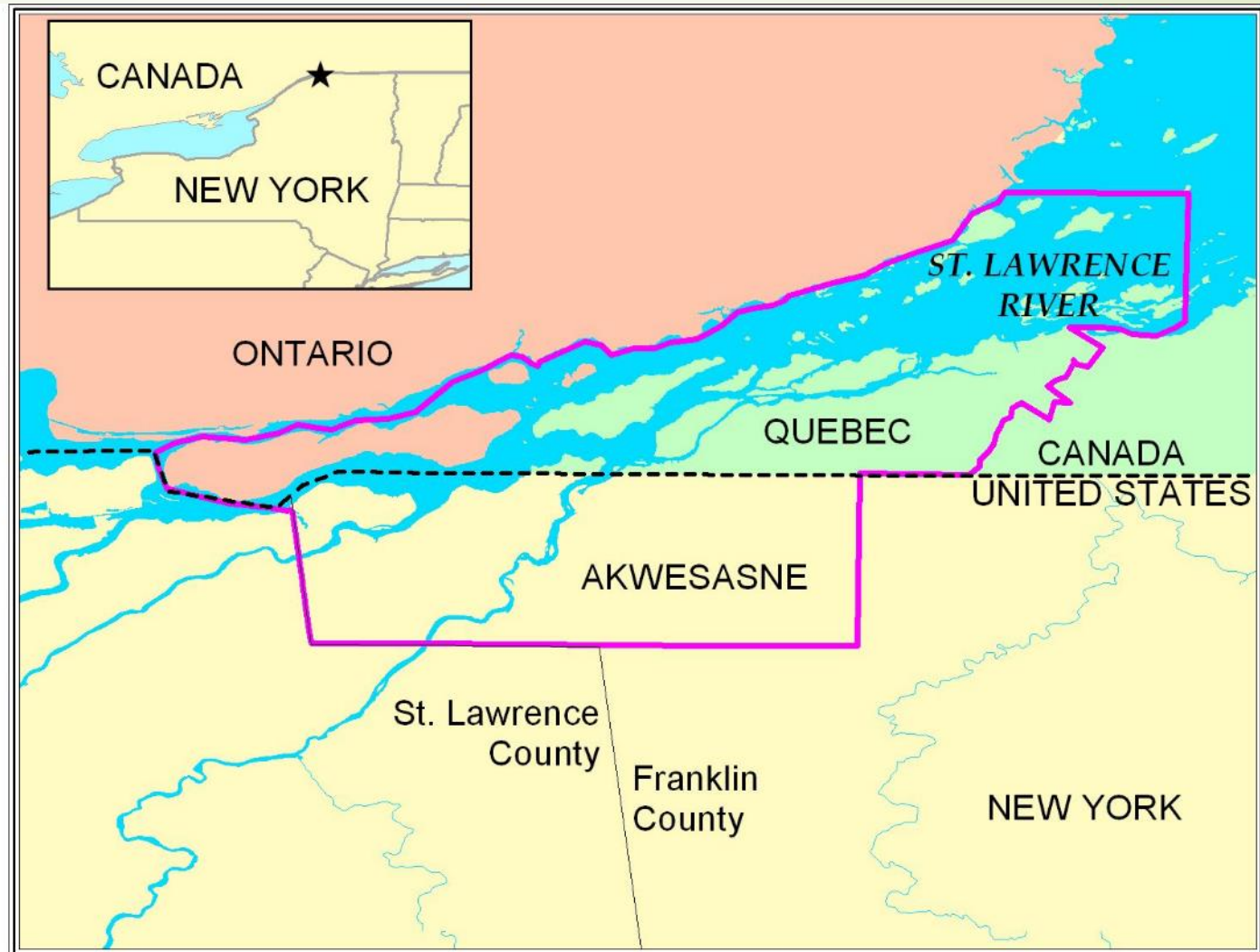
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**Retha M. Leno**, Executive  
Director  
Akwesasne Housing Authority

# St Regis Mohawk Tribe

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.”*

# Akwesasne Housing Authority

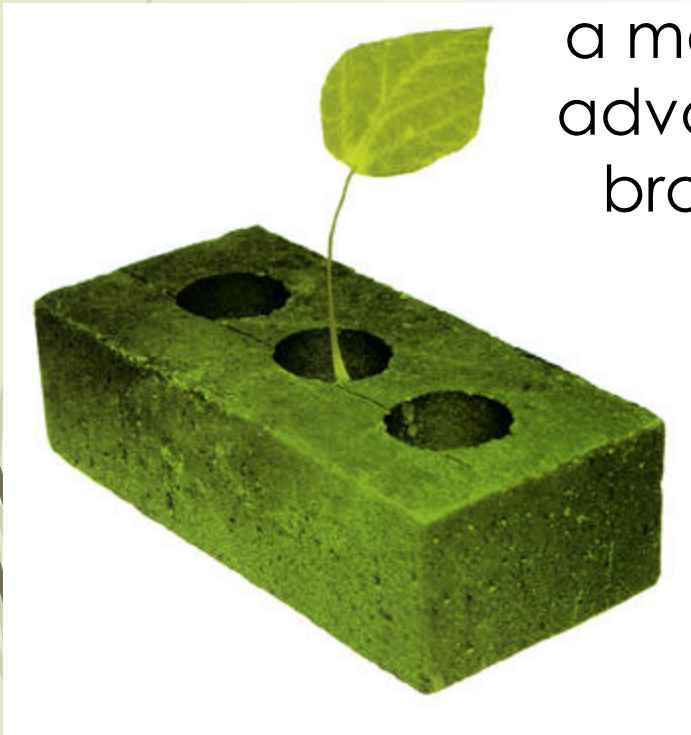
## Accomplishments: Providing Low Income Housing Support to the Akwesasne Community since 1984

### 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.



*2015 – US Dept of Energy – Technical Assistance awards lead to a draft of the Tribe's Strategic Energy Plan.*

# Thinking as a Community Energy Philosophies

10 YEAR  
TRIBAL STRATEGIC ENERGY PLAN

*Created By*

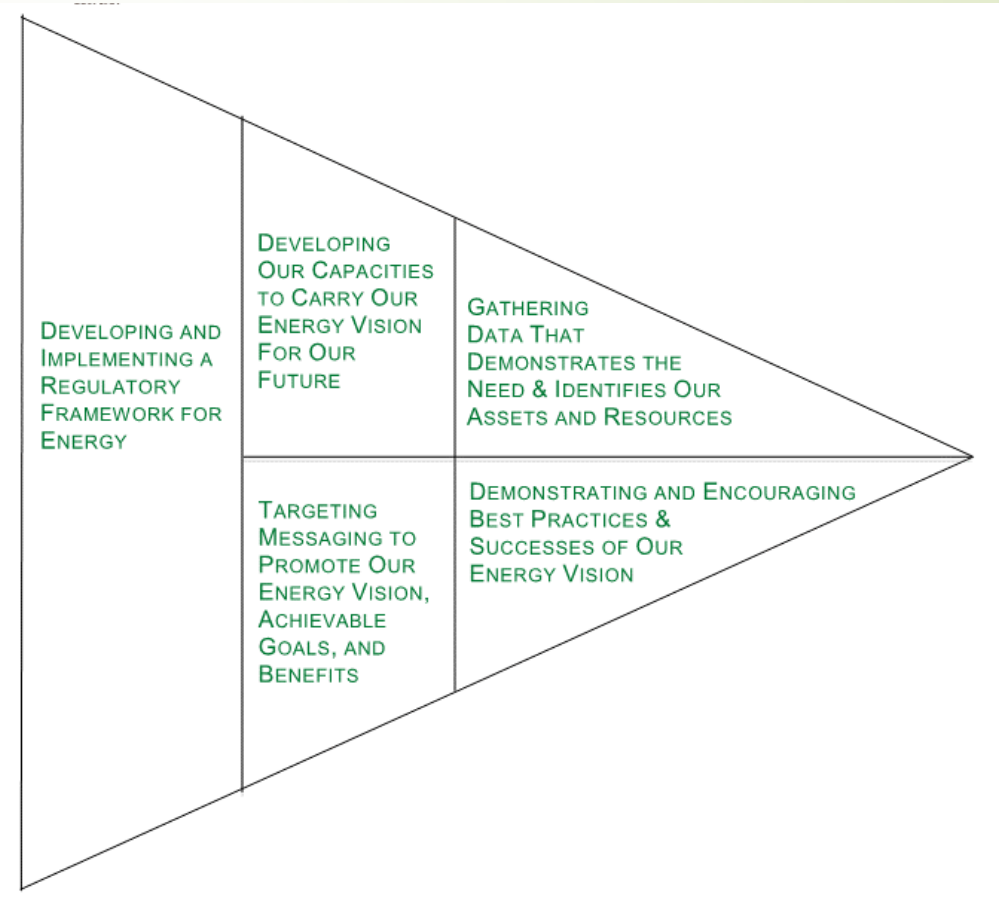
**Akwesasne St Regis  
Mohawk Tribe**

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**

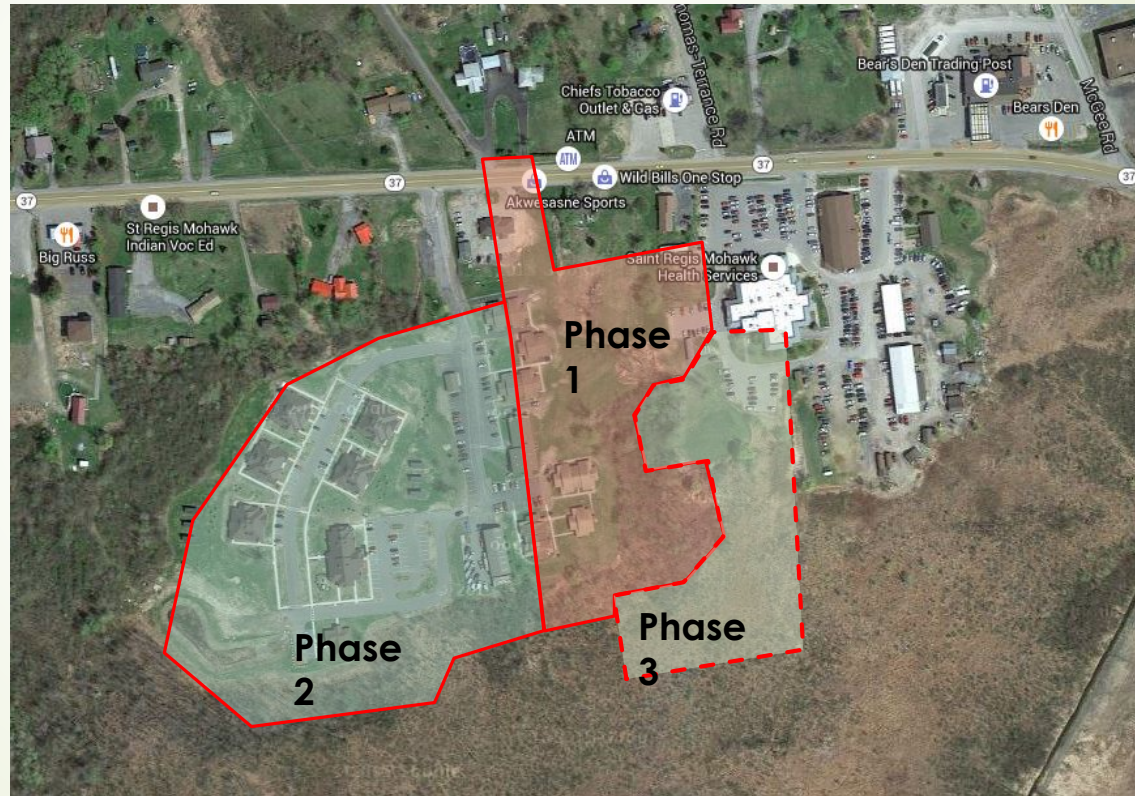


# Akwesasne Housing Authority's Sunrise Acres Senior Low-Income Housing

Phase 1 – 1998,  
conventional  
construction

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

Phase 3 – 2019  
Sustainable Design,  
Remote net-  
metering, Net Zero



## 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 ft<sup>2</sup> each)
- 1 Training Center (5,952 ft<sup>2</sup>) containing office and meeting space
- Sustainable Design Elements (Solar & Geothermal)



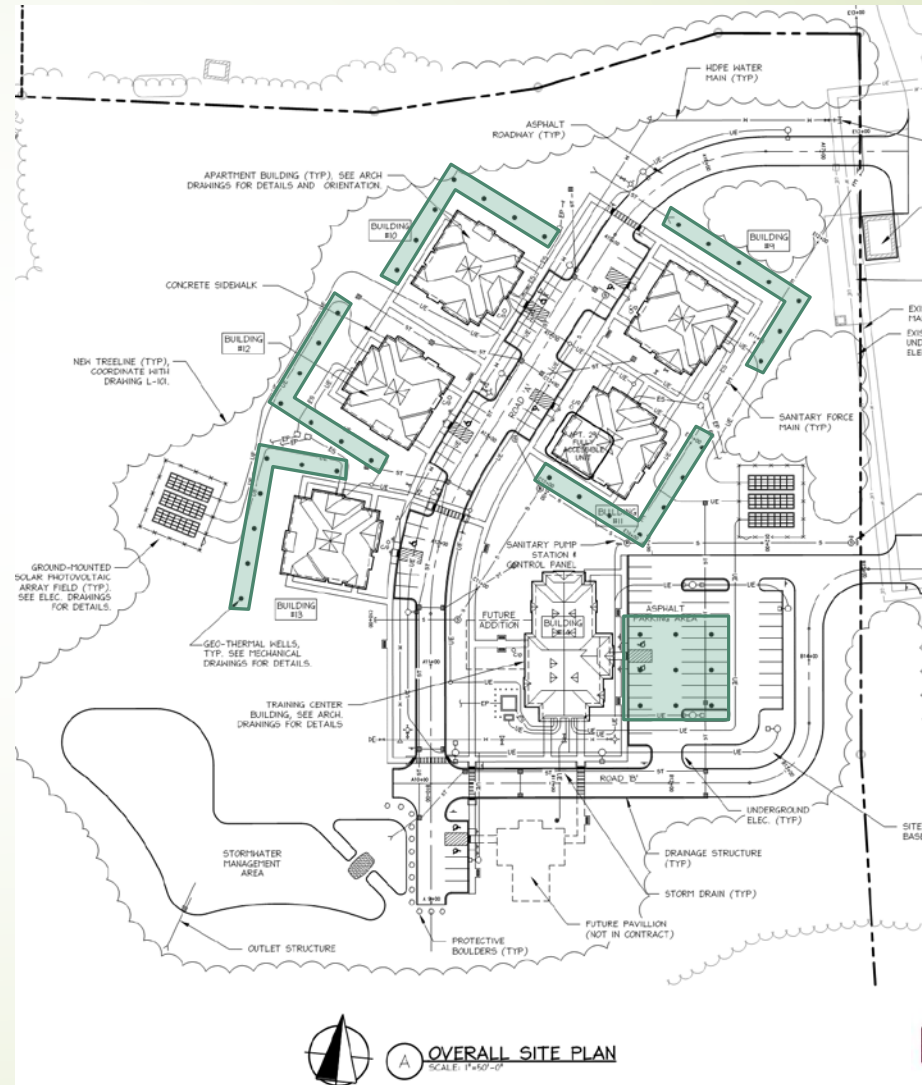
# Energy Efficient Building Envelope

- 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,  $U=0.41$



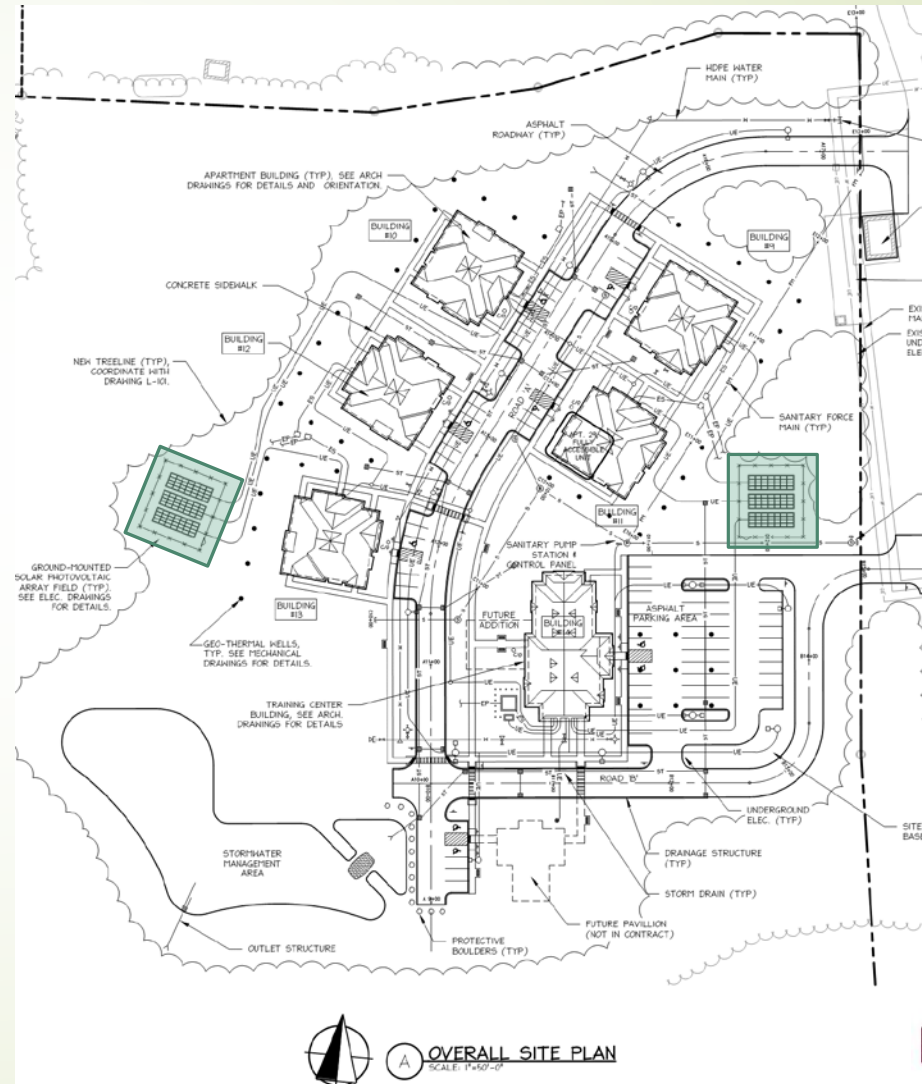
# Geothermal System

- 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



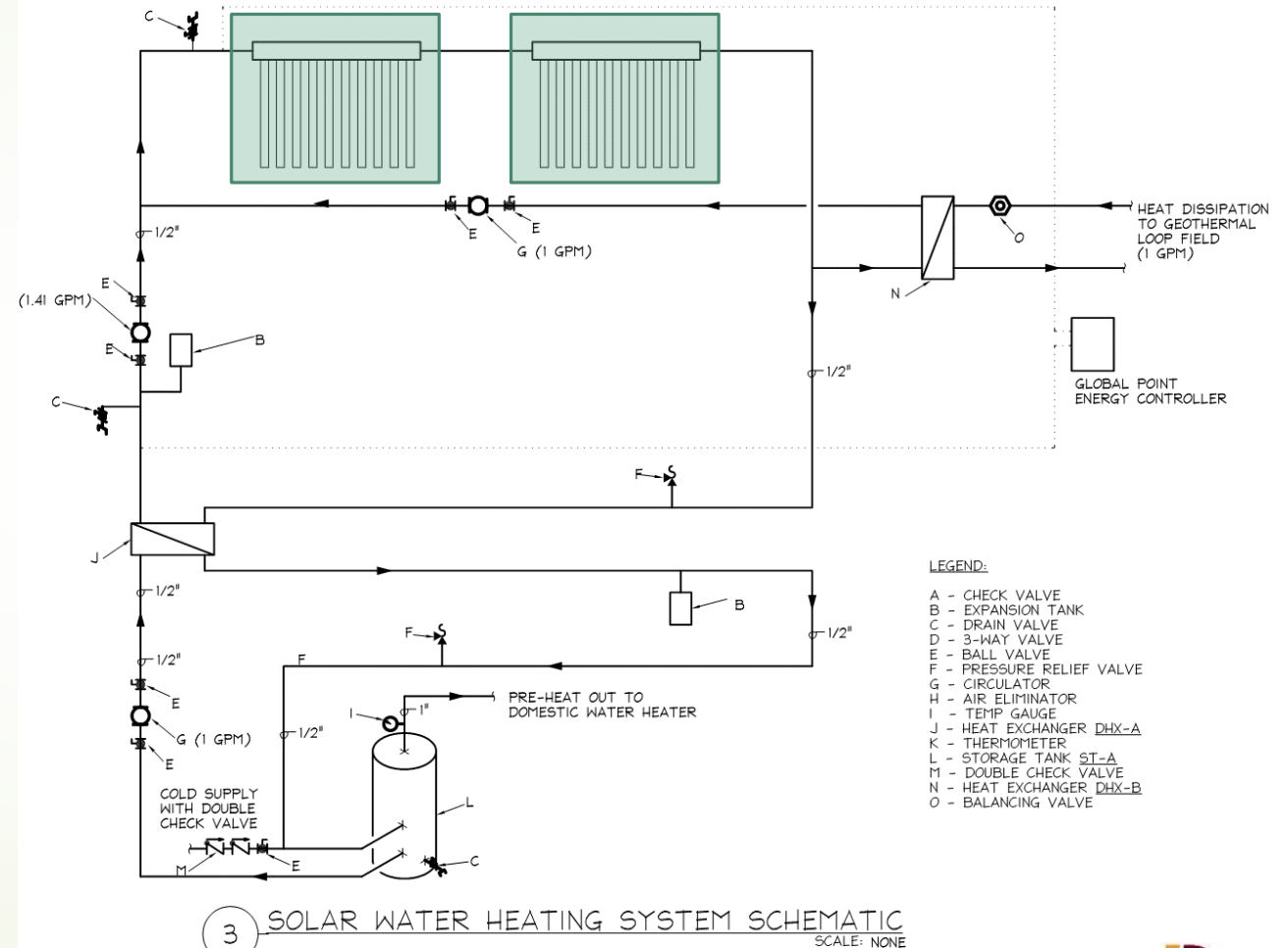
# Photovoltaic System

- 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



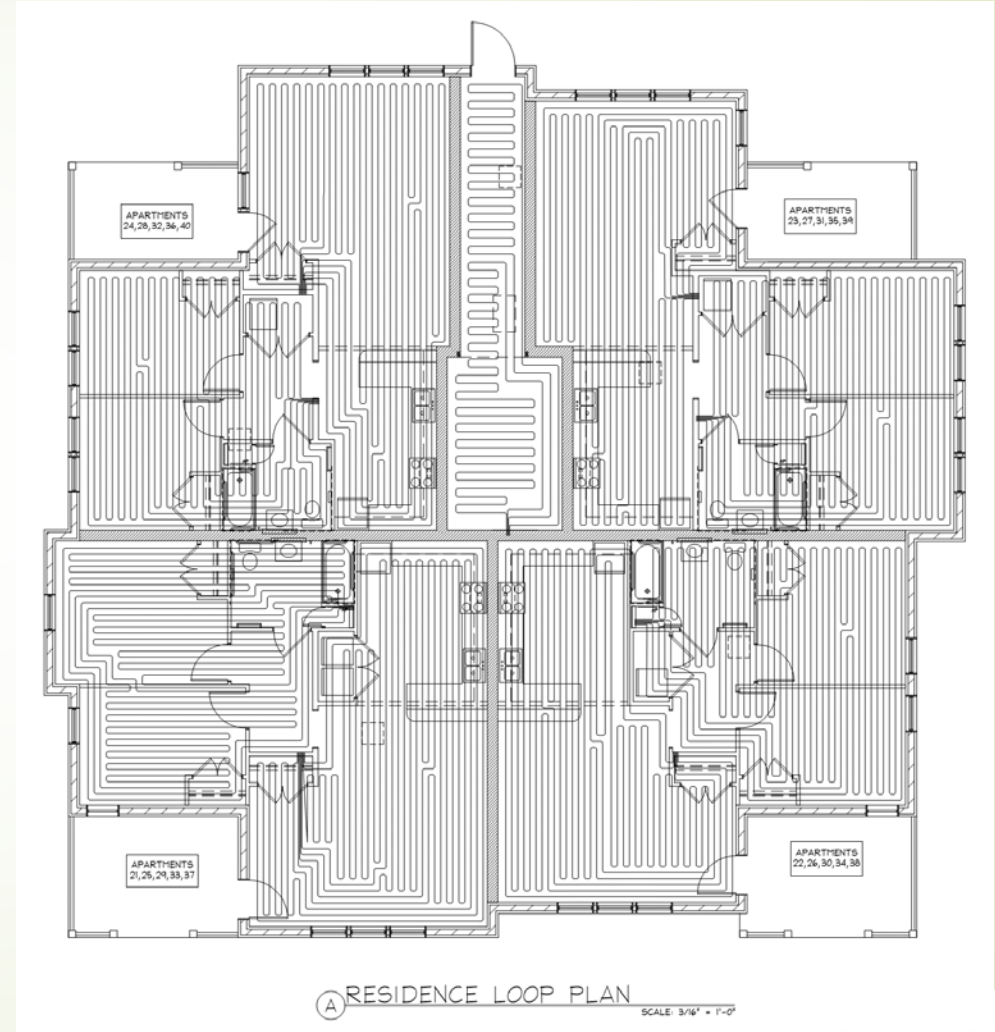
# Solar Thermal System

- Evacuated Tube Heat-Pipe Collectors
- 2 panels per building – 45 ft<sup>2</sup> 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





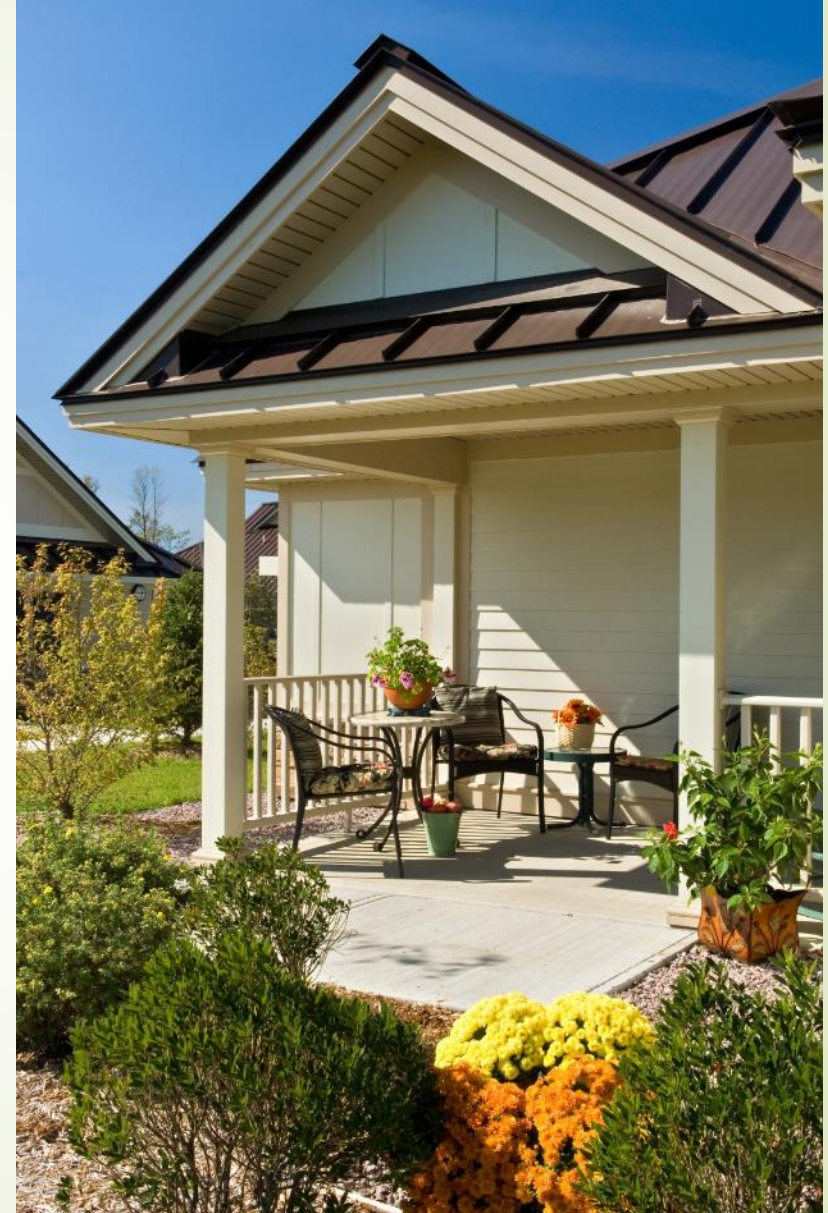
Compared with Phase 1  
Apartments

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



CONCEPTUAL SITE PLAN

SCALE: 1"=30'-0"





# 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:

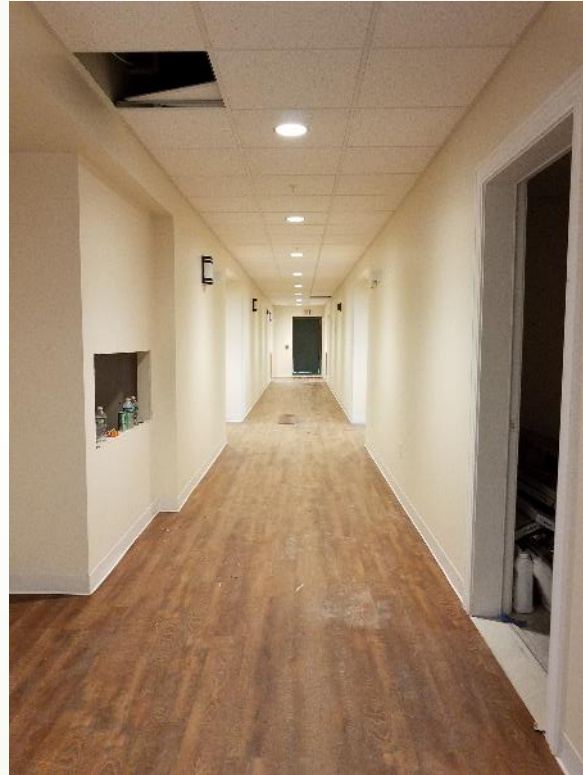




# Saint Regis Mohawk Tribe Support

- ▶ 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

**AHA's Go Solar Initiative!**

**INFORMATION**  
Akwesasne Housing Authority (“AHA”) has the opportunity to apply for up to \$600,000 under the Indian Community Development Block Grant (“ICDBG”) program for proposed community development and housing activities, which may potentially include housing rehabilitation projects, housing construction projects, land acquisition to support new housing, homeownership assistance projects, economic development projects, public facilities and improvement projects, and microenterprise programs.


**OPTIONS:**  
AHA’s proposal includes offering 3 alternatives.  
1. 350 kW  
2. 1,350 kW  
3. 5,000 kW

**POTENTIAL**  
The potential energy from the 3 alternatives are:  
• 350 kW system = 457,801 kW per annum  
• 1,350 kW system = 1,768,850 kW per annum  
• 5,000 kW system = 6,525,890 kW per annum  
The average household uses only 9,600 kW of energy per year.

**Proposed Akwesasne Solar Farm Site Map**

**LOCATIONS**  
The proposed Akwesasne Solar Farm locations are:  
1. Located off of Blair Road  
2. Corner of Blair Road and St. Rte. 95

**SOLARIZE AKWESASNE!** **SUNVEST SOLAR INC**



# 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:



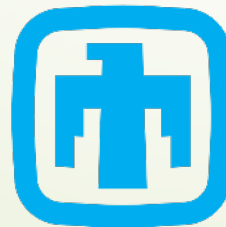
Federal Home Loan Bank  
NEW YORK



Office of Temporary  
and Disability Assistance



NYSERDA



Sandia  
National  
Laboratories



# Questions?

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Thank you.

**Retha M. Leno**, Executive Director  
Akwesasne Housing Authority

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Contact me for a copy of this presentation.

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