

**GODFREY  KAHN S.C.**

**AKWESASNE HOUSING AUTHORITY  
Community-Scale AHA Go Solar Initiative**



**Presented By:  
Retha Herne & John Clancy**



# Saint Regis Mohawk Tribe

- Contiguous Mohawk Community spanning parts of:
  - One state (NY);
  - Two provinces (ON & PQ); and
  - Two countries (US, CA).





# Saint Regis Mohawk Tribe

- The Mohawks were the easternmost member of the Haudenosaunee Confederation that entered into treaties with the United States in the 18<sup>th</sup> and 19<sup>th</sup> centuries (SRMT affected by the Jay Treaty of 1794 – Indian Reorg Act).
- SRMT occupies 6 square miles within its ancestral homeland along the St. Lawrence River.
- 19.4% of all Tribal families and 22.4% of the Tribal population is below the poverty line, including 31.3% of those under age 18 and 14.9% of those age 65+.
- Unemployment: 11% (surrounding areas 5.4%)



# Saint Regis Mohawk Tribe

- The Saint Regis Mohawk Tribal Council created the AHA by ordinance in 1984 for the purposes of:
  - Remediating unsafe and unsanitary housing conditions that are injurious to the public health, safety and morals;
  - Alleviating the acute shortage of decent, safe and sanitary dwellings for persons of low income; and
  - Providing employment opportunities through the construction, improvement, extension, alteration or repair and operation of low-income dwellings.
- AHA has constructed a total of 405 homes for low-income members since 1984.

# AHA Mission

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

*“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.”*



# AHA 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 (HUD).
- ~ Received 18 [NAHASDA](#) Block Grants (Years 1998 - 2016) in excess of \$30 million.
- ~ **Community Cooperative Projects** including a 12-bed Tribal Foster Care Facility, leveraging of funds for participation in the SRMT Water Enhancement Project, and expansion of the Tribe's limited sanitary system.
- ~ Created and managed the Akwesasne [Neighborhood Networks](#) Computer Learning Center, first of its kind established in Indian Country, accomplished within two months.
- ~ Administration of a Rental Assistance program for low income families residing on and near the SRM Reservation, with implementation of a family self sufficiency component.
- ~ Creation and continued support of the [Akwesasne Boys & Girls Club](#), established to provide exciting opportunities for children of all backgrounds.
- ~ Additional facility expansion to the Partridge House, the only in-house drug and alcohol rehabilitation facility for Native Americans east of the Mississippi.
- ~ 2005 construction of the [new senior citizen center](#), using leveraged funds from the SRMT, USDA, the St. Regis Mohawk Office for the Aging, and local fundraising through various local events..
- ~ Construction of Low Income Senior Housing Complex – Sunrise Acres Phase 1 (1998) and Phase 2 (2011 - ARRA).
- ~ Contribution of \$1.8 million to the Diabetes Center of Excellence through IHBG & fundraising.

# AHA's Rise to Green

- Recently, the Akwesasne Housing Authority has spearheaded **Sustainable Design Practices** and **Renewable Energy** for all of its projects as a matter of policy. It has also been advocating for similar policies in the broader Akwesasne Community.
- 2015-2016 - AHA realized a valuable partnership with the US Department of Energy/Indian Energy, NREL & Sandia Labs - provided excellent TA to develop the Tribe's draft Strategic Energy Plan for our community to jump start efforts.

# AHA's Rise to Green

- AHA's Considerations for Change
  - Organization's emerging philosophy of responsible construction
  - Urgency for more cultural/environmental awareness on the long term impacts of construction on Mother Earth
  - Green Technologies – new to the AHA
  - Our youth asked us to!
- Our Start (2008/2009):  
Creation of a safe/pleasant neighborhood for tribal elders
  - Expansion of Existing Elderly Housing
  - Convenience to Services (clinic, senior center, etc.)
- Money!
  - ARRA created the opportunity for AHA to push forward a “future project” in the planning stages.
  - Added points for green
  - \$4 Million



# Background Regarding SRMT and AHA

- Saint Regis Mohawk Tribe (SRMT)
  - Leadership in support of AHA efforts
  - Wish to create an energy office w/in SRMT
- AHA and its energy efficiency and renewable energy initiatives
- AHA's ultimate goal of having “net zero” housing and related buildings throughout SRMT Reservation



# Project Overview

- AHA will install approximately **614.74** kW to service **159**-housing related buildings, including **145** tribal residences.
- The electrical power from the solar facilities will be utilized under National Grid's available net metering programs to offset the energy use of AHA's buildings and tribal members' residences.
- The project will serve **5%** of the total tribal community residential energy load and **4%** of the total electrical energy usage, including governmental and commercial buildings.



# Project Objectives

- Decrease reliance on fossil fuels and reduce AHA's, the Tribe's, and Tribal members' environmental footprints;
- Increase AHA's, the Tribe's, and Tribal members' self-sufficiency;
- Add diverse, complementary green energy systems;
- Significantly lower energy costs for Tribal members and AHA;
- Provide a model for low-income Tribal energy projects; and
- Create jobs and mentoring opportunities for Tribal members.

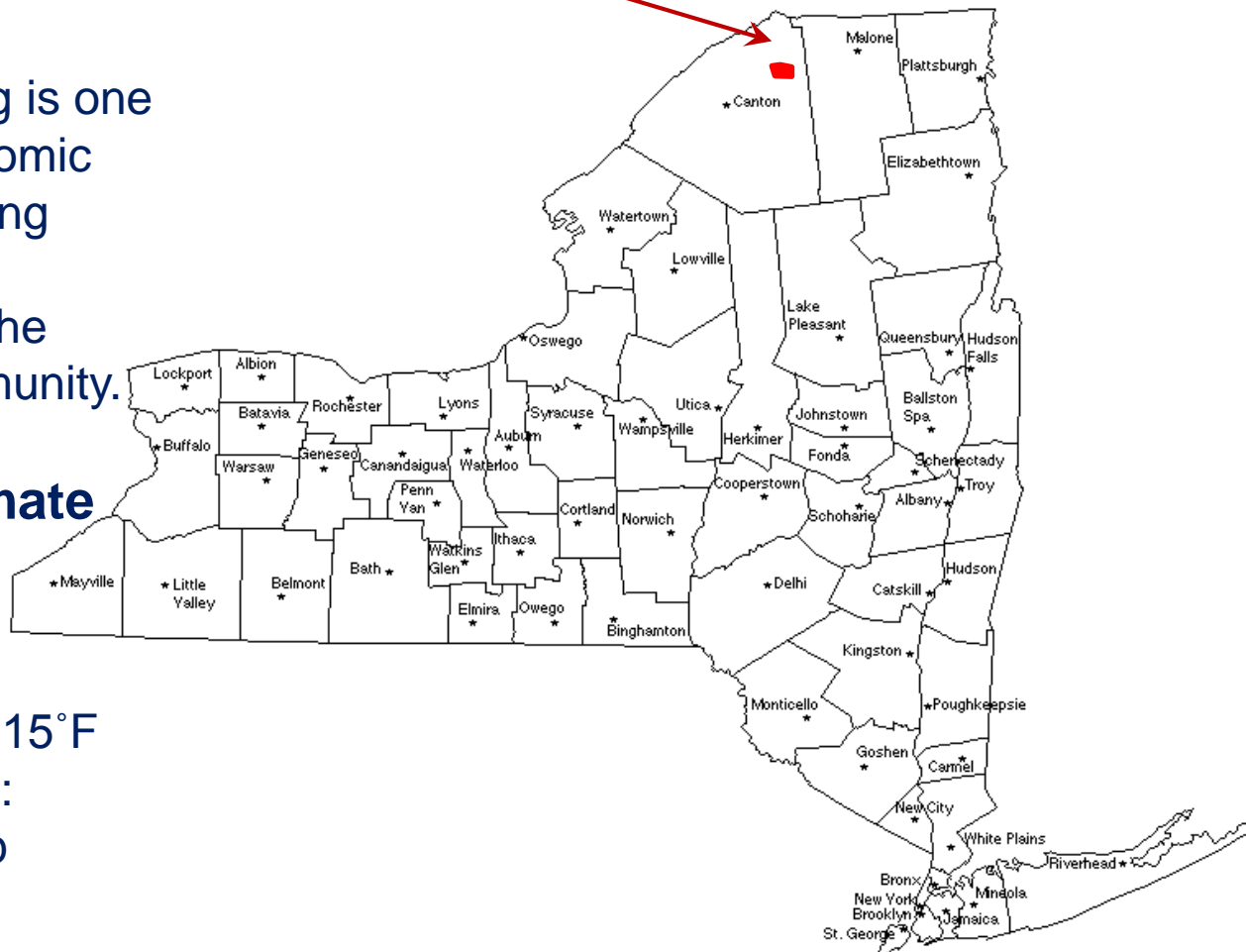


# “It Gets Cold up Here”

Residential Heating is one of the largest economic factors in maintaining affordable housing, especially among the elderly in the community.

## Akwesasne Climate

- Zone 6
- 8,089 HDDs
- 376 CDDs
- Winter Design:  $-15^{\circ}\text{F}$
- Summer Design:  $85^{\circ}\text{F}/71^{\circ}\text{F}$  db/wb





## High Cost of Electricity for AHA and SRMT Members

2015 average residential monthly electricity consumption:

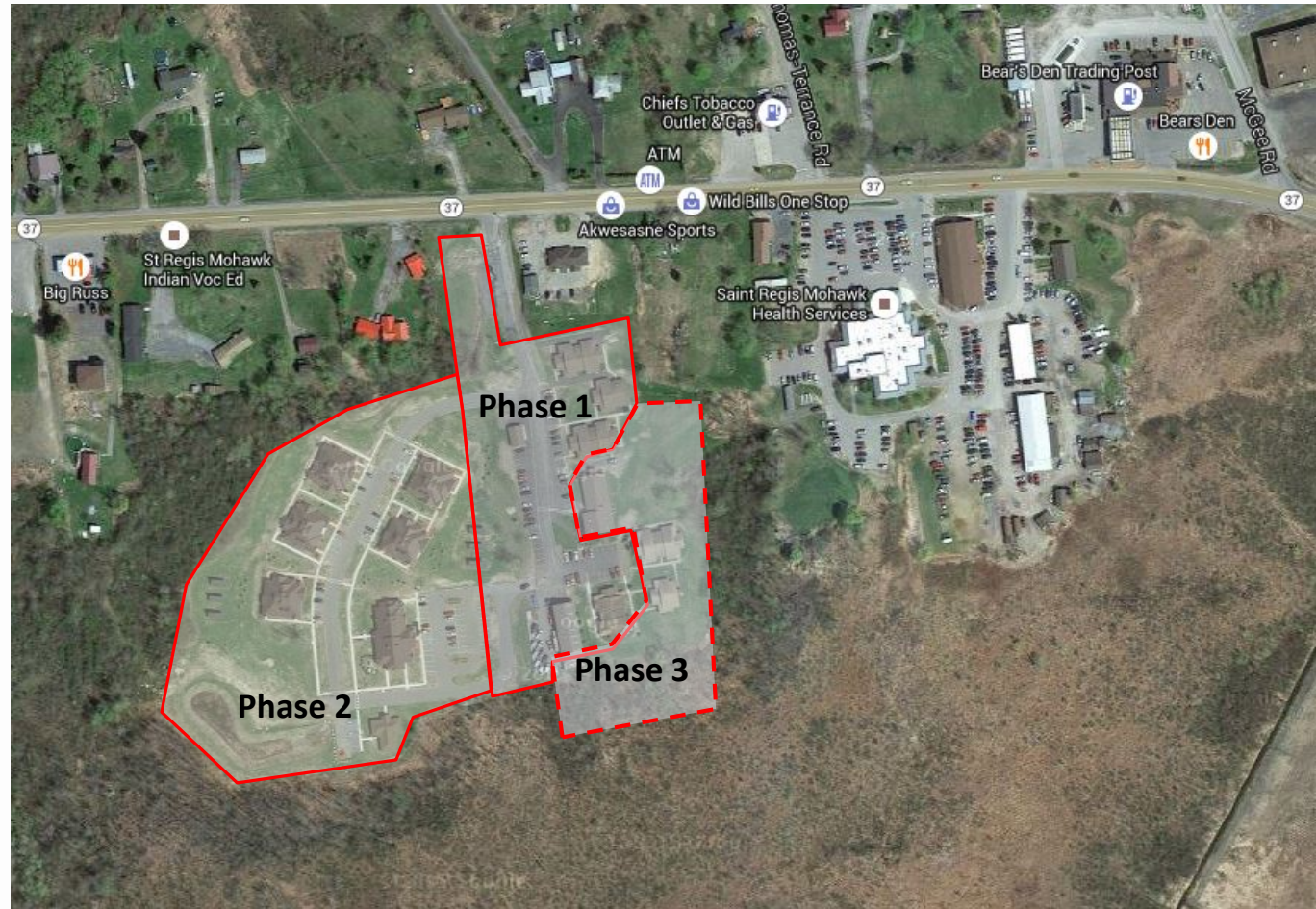
- U.S.: 901 kWh @ 12.65 cents per kWh = \$114.03
- AZ: 1028 kWh @ 12.13 cents per kWh = \$124.67
- CA: 557 kWh @ 16.99 cents per kWh = \$94.59
- NM: 635 kWh @ 12.47 cents per kWh = \$79.23
- **NY: 601 kWh @ 18.54 cents per kWh = \$111.32**
- WA: 964 kWh @ 9.09 cents per kWh = \$87.64
- WI: 668 kWh @ 14.11 cents per kWh = \$94.26

See U.S. Energy Information Agency  
<http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>



# AHA's Sunrise Acres Senior Low-Income Housing

Phase 1 – 1998,  
conventional  
construction  
Phase 2 – 2011  
Sustainable  
Design, Solar PV  
Phase 3 – 2017  
Sustainable  
Design, Remote  
net-metering





# Sunrise Acres Phase 2 Expansion

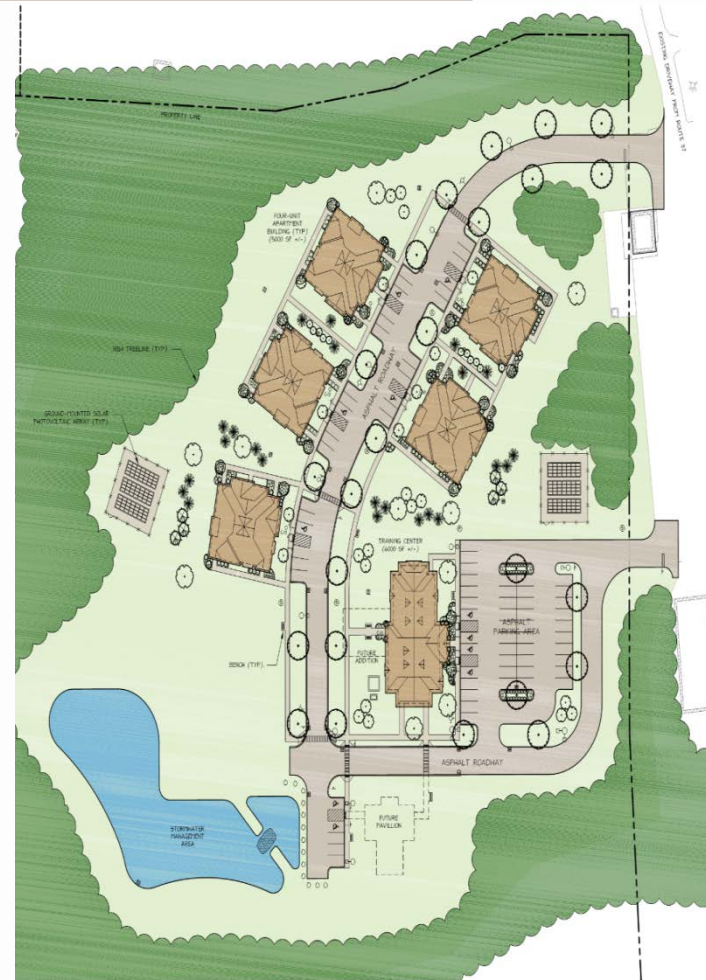
- Funded by HUD's Native American Housing Block Grant Program
- Project Goals:
  - 20 Two Bedroom Apartments
  - Training Space for AHA & Community Groups
  - On Site management Office
  - "Sustainable design strategies will be employed where agreed to be practical and cost effective."





# Sunrise Acres Phase 2 Implementation

- Constructed in 2011 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)



OVERALL SITE PLAN  
SCALE: 1" = 40'







## Sunrise Acres Phase 2

### Overview of Systems

- Building Envelope
- Geo-thermal System
- Photovoltaic System
- Solar Thermal System
- Energy Efficient HVAC System
- Energy Efficient Lighting
- Energy Conserving Equipment & Fixtures



# Energy Efficient Building Envelope

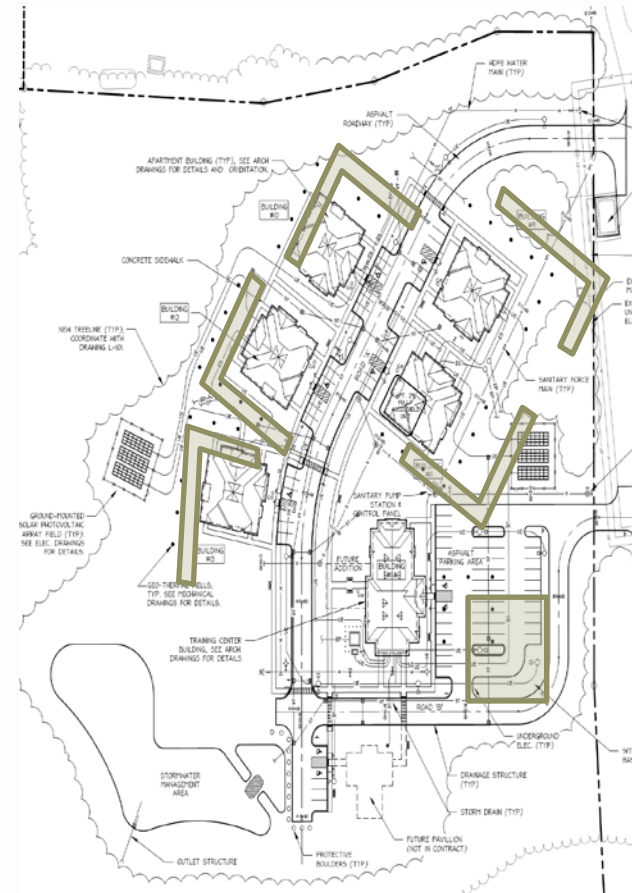
- Insulated Concrete Form (ICF) Construction for Walls & Foundation - R20
- Traditional pre-engineered wood truss roof - R40
- Fully insulated concrete slab floors – R10
- Windows – Double Hung, Anderson 400 Series, Argon gas filled Low E,  $U=0.41$





# 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

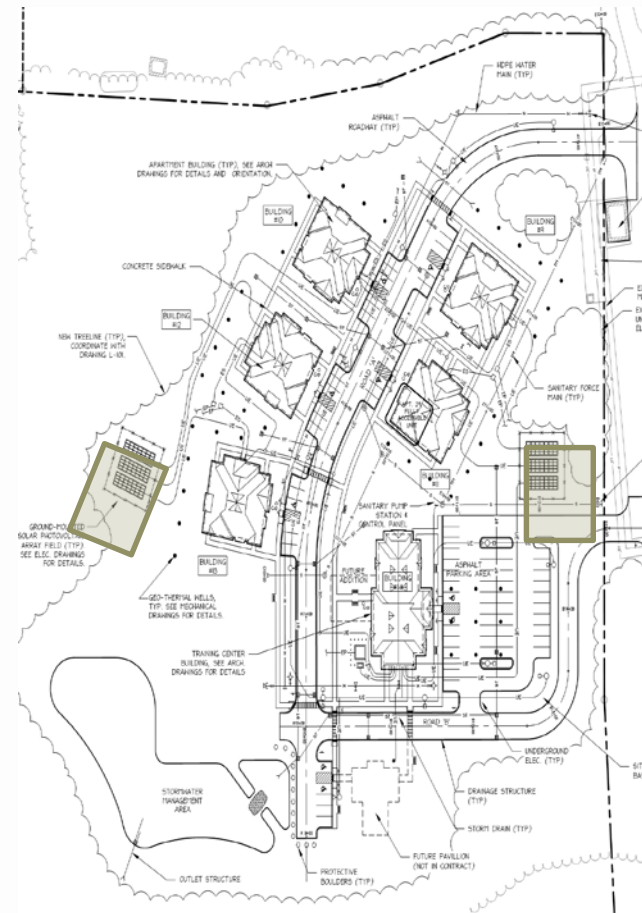


OVERALL SITE PLAN  
SCALE 1/4" = 1'-0"



# 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 the buildings



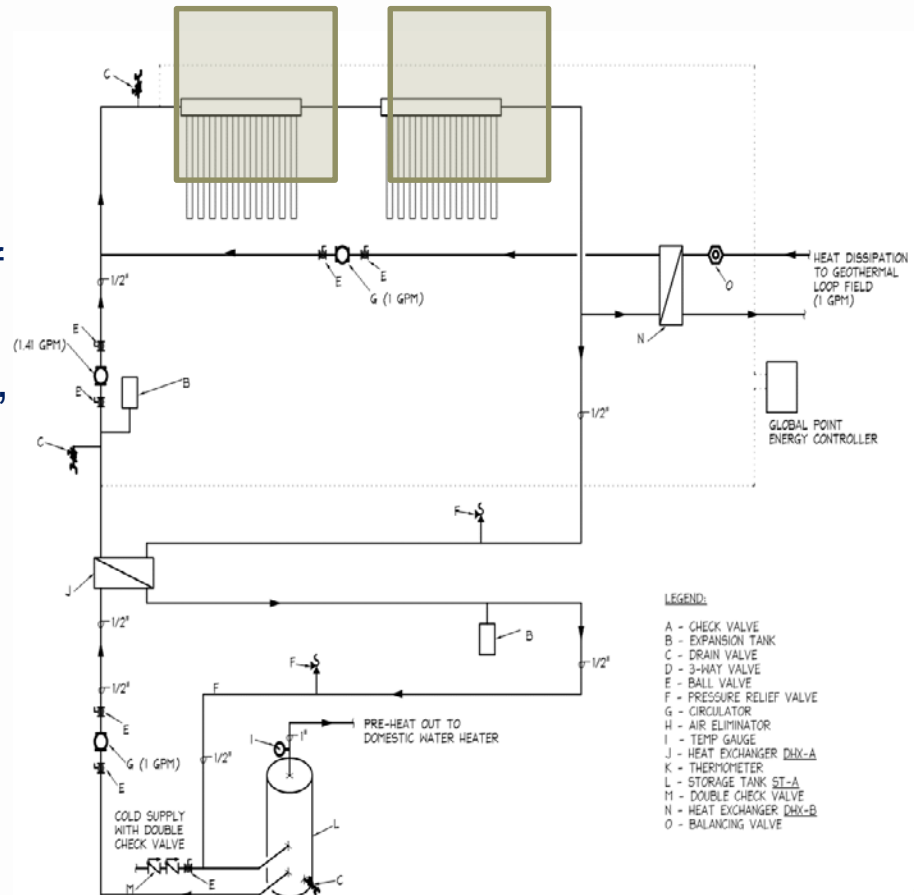
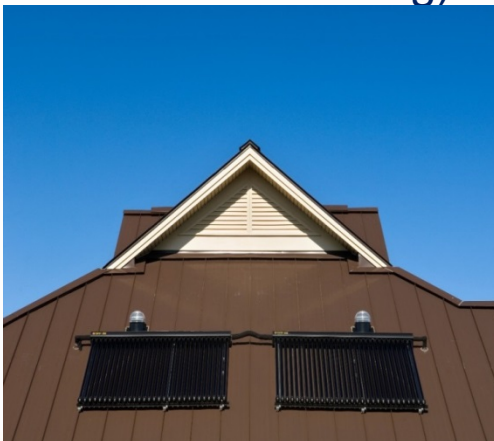
OVERALL SITE PLAN  
SCALE: 1"=10'-0"





# 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)



3 SOLAR WATER HEATING SYSTEM SCHEMATIC  
SCALE: NONE



# Sunrise Acres Phase 3 Expansion

- Funded by:
  - Office of Temporary and Disability Assistance (OTDA) Homeless Housing and Assistance Program (HHAP)
  - New York State Homes and Community Renewal (HCR)
- Project Goals:
  - Two new Buildings adjacent to Phase 1
  - Seniors Building – 10 one Bedroom & 2 two Bedroom Independent living apartments with common spaces including Kitchen, Community Room, Laundry Room, Offices and Library
  - Homeless/Veterans Building – 6 one bedroom 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)
  - Construction in 2017



CONCEPTUAL SITE PLAN

SCALE: 1/8" = 1'-0"





# Energy Efficiency Strategies

- High Efficiency Envelope – ICF construction, R30 walls, R50 Roof
- High Efficiency HVAC Systems – Air Source VRF Heatpump with Biomass (pellet Boiler) with radiant floor supplemental heat in the Seniors Building Common spaces. ERV for ventilation
- High Efficiency Lighting – CFL & LED interior lighting, LED exterior lighting, Solar Daylighting tubes
- Off-Site Solar PV array with Net metering – AHA “Go Solar Project”



# A New High Energy-Efficiency Initiative (2016)

- Energy efficiency and other related housing improvements for existing Tribal housing.
- Funded with Indian Community Development Block Grant (ICDBG), Indian Housing Block Grant, and New York State Energy Research and Development Authority (NYSERDA) Incentives.





# Work Performed Under AHA High Energy-Efficiency Initiative

- Air sealing;
- Basement wall demo;
- Duct sealing, installation, modification and balancing;
- Furnace adjustment;
- Installation of gable vents, bath fans, trap in bathroom plumbing;
- Attic insulation;
- Chimney removal;
- Basement window replacement;
- Gutter replacement;
- Rim joist upgrades;
- Smoke & CO detector installation;
- Spray Foam application above grade basement walls, floor of overhang, overhangs, rim joists;
- Venting bath fans, dryer and kitchen exhaust to exterior; and
- Water heater replacement.

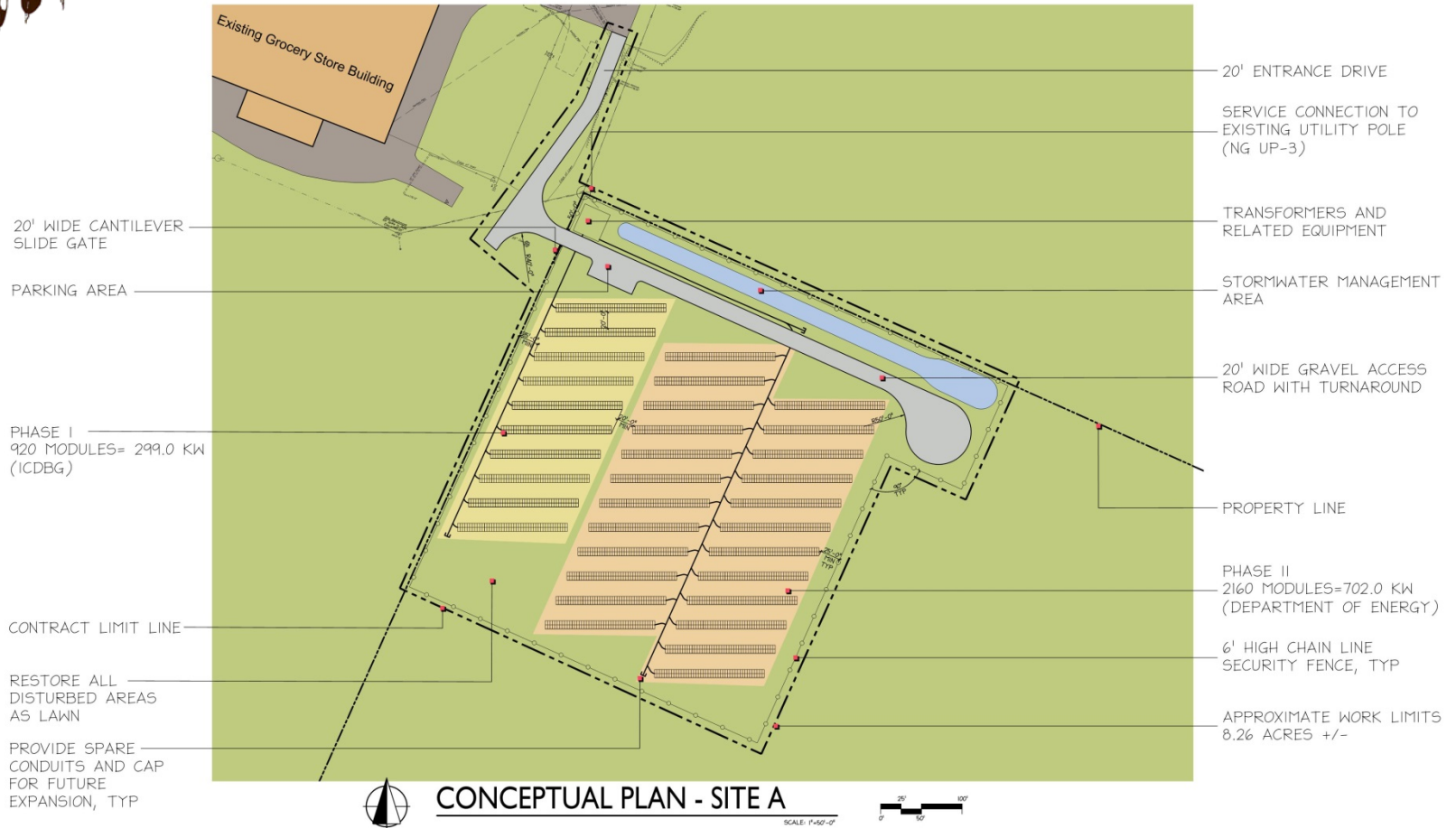


# “Go Solar” Program

- Funded from ICDBG Program and DOE Tribal Energy Program.
- Tribe set aside 25 acre parcel for start up and future expansion.
- 30 kW on-site solar addition (Sunrise campus).
- Initial 275 kW Array for offsetting energy use at Sunrise Acres via net-metering.
- Addition 615 kW Array to offset other AHA owned or operated properties.
- Remainder of 25 Acre site to be developed as Solar Farm for net metering additional AHA



# AHA Solar Farm Site



Go Solar  
Akwesasne Housing Authority

September 9, 2016

SK-C2



# Aggregated Net Metering

- AHA can take advantage of New York's remote aggregated net metering program to service the Sunrise Acres Site.
- New York's remote aggregated net metering program allows a customer to receive full retail credit on its various accounts from electric generating equipment located on property within the same utility zone.



# Community Distributed Generation

- Tribal member residences can participate under New York's Community Distributed Generation (Community DG) program.
- Community DG projects:
  - are located behind a non-residential host utility meter;
  - generate net metering credits for electricity production in excess of the host's usage; and
  - allocate these credits to the project's members pursuant to the applicable utility tariff.



# Potential Project Partners

- AHA has received a commitment from an experienced New York-based installer knowledgeable of NYSERDA and National Grid programs and requirements (Solar Windependence) and a New York area investor (SSI NJ, LLC).
- The installer has committed to install the project at the cost in the grant application and to provide a 6-year parts and labor warranty on the system, a pass-through of all warranties provided by material manufacturers, and 5 years of operation and maintenance.
- However, AHA will issue a request for proposals to potentially obtain better pricing terms and potentially other beneficial terms.



# Completed Tasks

- Prepared an initial draft of the invitation to Indian-owned firms and request for proposals for contractor and investor.
- Prepared an initial draft of the operating agreement.
- Prepared an initial draft of the design-build agreement.
- Prepared in initial draft of the power purchase agreement.



# Plans for the Fourth Quarter of 2016

- Issue the invitation to Indian-owned economic enterprises and request for proposals.
- Establish the Solar LLC and work to finalize the operating agreement and the capital contribution agreement.
- Conduct environmental and cultural review.
- Prepare and revise design-build agreement between Solar LLC and installer.
- Prepare and revise LLC operating agreement and power purchase agreement.





# LLC Operating Agreement

- Will provide that AHA, as an instrumentality and subdivision of the Tribe, receives full credit for the DOE grant and full value of the investment tax credits received by investor and the NYSERDA incentives for the solar facilities.
- Will require that once the remaining amount due to the investor has been paid, any additional money coming into the LLC will be credited to AHA as an instrumentality and subdivision of the Tribe.



# Power Purchase Agreement

- Will provide for energy payments to be reduced to only a very nominal amount.
- The Power Purchase Agreement and LLC Operating Agreement allow AHA to ensure the investor's exit and full AHA ownership of the facilities.

# Plans for 2017

- Confirm selected partners with DOE.
- Finalize deal documents.
- Complete construction permitting.
- Confirm NYSERDA funding.
- Obtain/confirm interconnection approval.
- Implement project construction and commissioning.
- Begin monitoring of solar production.

# Thank You



**Retha Herne**

**[rherne@aha-nsn.gov](mailto:rherne@aha-nsn.gov)**

**518-358-9020, ext. 108**

**John Clancy**

**[jclancy@gklaw.com](mailto:jclancy@gklaw.com)**

**414-287-9256**

**GODFREY  KAHN<sup>S.C.</sup>**

[www.GKLAW.COM](http://www.GKLAW.COM)