

**SENECA NATION OF INDIANS
STRATEGIC ENERGY RESOURCE PLANNING
FINAL REPORT**

First Steps Toward Renewable Energy & Energy Efficiency Energy
Planning Grant

DE-FG36-03GO13114

Prepared By:
Gina C. Paradis
Mgr.; Economic Development & Tourism Division
Community Planning and Development Dept.
Seneca Nation of Indians
12837 Rt.438
Irving, NY 14081
gparadis@sni.org

TABLE OF CONTENTS

Executive Summary.....	3
Background	5
Planned Objectives	8
Activities & Outcomes.....	9
Energy Efficiency	
Organizational & Infrastructure Assessment	
Renewable Resource Assessment	
Next Steps	21
Conclusion	23

Attachment:
Final Report from Na Stá Peme Consulting

EXECUTIVE SUMMARY

The Seneca Nation of Indians launched their strategic energy planning process in 2003, when it directed the Community Planning and Development Department to investigate alternative sources of energy and the development of its natural resources for the future.

After initiating a visioning process to identify the long range goals and objectives of the Nation's Energy Plan, the Community Planning and Development Department (CPDD) applied for and secured a grant from the Department of Energy (DOE) for a "First Steps Towards Energy Efficiency & Renewable Energy" grant to move the process forward and perform an analysis of the Nation's current and projected energy use, an overview of its natural gas resource and production, and an energy options analysis to define the most logical renewable energy resources to investigate for future development.

The results of this phase of planning are recorded herein, and reflect a culmination of two and a half years of activities dedicated to the development of a Strategic Energy Plan. With the completion of Phase II, the Seneca Nation now has a solid foundation upon which to build its Energy Program, and the Strategic Energy Plan document that is being drafted will serve as the critical path to achieving their goals.

The Seneca Nation of Indians has pursued this planning process to accomplish multiple goals, 1) to establish the community's goals and concerns regarding energy matters; 2) to define their natural energy resources, both renewable and non-renewable; 3) to determine the most effective management and development of those resources for their long term sustainability; 4) to identify the most economically viable options for energy generation and 5) to develop the efficient and effective plan for achieving energy self-sufficiency.

Phase I of the energy planning process accomplished the visioning, issue identification and goal setting elements of the Plan. Phase II, funded with the DOE "First Steps..." grant, provided an overview of the renewable and non-renewable energy resources of the Nation and defined the current and projected energy use of the tribe. The Phase II work also generated valuable information on the Nation's opportunities for improvement with regard to infrastructure, organizational structure and legal agreements. Recommendations were crafted with specific guidelines for addressing these concerns and moving the process from the planning stages to implementation. Sites were researched and selected for wind studies on two of the Nation's territories and an anemometer loan application was completed for a tall tower through the DOE loan program. A Spring, 2006 installation is anticipated.

The relationship-building element of Phase II was one of the most challenging aspects of this phase in the Nation's energy planning; relations with the utility providers and the city officials (the city of Salamanca lies within the Seneca's Allegany Territory boundary) have been strained at best, over the years, and discussions are generally guarded rather than forthcoming. Cooperation and coordination between the Nation, its Gaming Corporation, the utility providers, and the City is vital to the long term success of the Seneca's energy planning mission, yet this is an arduous task given the disparate priorities of each. Our phase II activities, however, helped to establish communications between the groups and reinforce the need for consistent and open dialogue.

Organizational development also presented itself as a fundamental need and subsequently a priority of the energy planning initiative. Phase II outcomes included the development of an energy planner staff position, and a training schedule that utilizes the resources of federal, state, Indian and private energy training programs. That position was filled in May, 2005 and the incumbent has attended several courses, including the Tribal Energy Training Course at the Colorado School of Mines, Renewable Energy conference training and a certification program in solar installations. Attendance at the WEATS Training and the Ground Source Heat Pump School are scheduled for 2006. Formation of a Tribal Utility is highly recommended as an outcome of the Phase II report, and a detailed feasibility study anticipated in Spring 2006 to determine the most effective and economically viable organizational structure for the utility.

With the completion of Phase I and II of the strategic energy planning process, the Seneca Nation of Indians have a solid foundation upon which their energy program will be developed. The funding from the DOE's "First Steps Towards Developing Renewable Energy and Energy Efficiency" tribal grant program provided the Seneca Nation with the necessary resources to complete a resource overview, energy use and rate analysis, organizational analysis, provider programs review, preliminary wind assessment, and a natural gas program assessment. It enabled the Nation to establish a clear path for implementation of the plan and assisted in the professional development of its energy planning staff.

With the completion of Phase II in the energy planning process the Seneca Nation has clearly defined its course for the next several years with regards to organizational development, energy conservation and management, and renewable energy development. A commitment to the program was made through the addition of staff and program funding to bridge the gap in grant availability. Phase III will continue seamlessly into the program implementation phase, as we complete more detailed energy audits and load analyses, complete a utility formation feasibility study and commence our wind assessment study on the Allegany Territory.

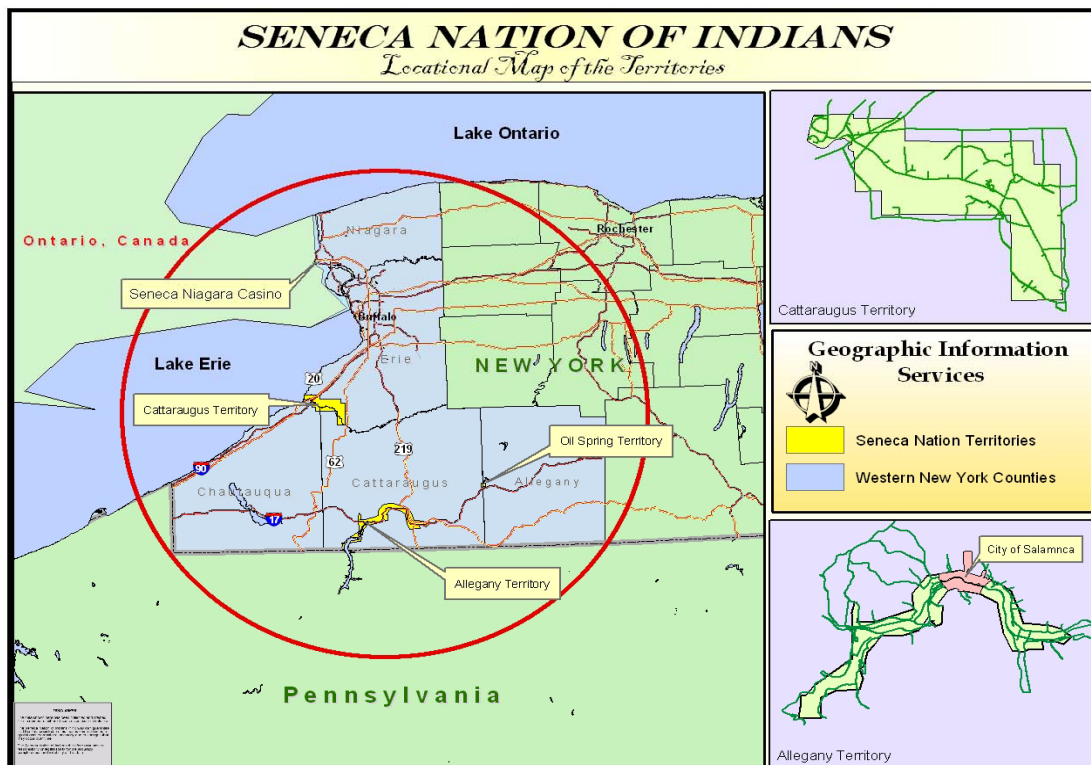
BACKGROUND

Seneca Nation Overview

The Seneca Nation is one of the original Six Nations of the Iroquois Confederacy, which also consists of the Cayuga, Onondaga, Oneida, Mohawk and Tuscarora nations. The Seneca originally lived in the areas west of the Genesee River and the Seneca Lake in the western region of New York State. Today, the Seneca Nation is a federally recognized tribe that holds title to three distinct territories in what is now known as Western New York, on land set aside by the 1794 Treaty of Canandaigua, they are the Allegany, Cattaraugus and Oil Spring territories. The Seneca Nation also holds title to land in Buffalo and Niagara Falls, NY as the result of a gaming compact with New York State.

These territories encompass parts of five (5) counties: the Allegany, Cattaraugus, Chautauqua, Erie and Niagara counties. The Oil Spring territory is one square mile or 640 acres of land located forty-three (43) miles southeast of the Cattaraugus territory and twenty-four (24) miles east of the Allegany territory. The Allegany territory is composed of 31,095 acres and includes the City of Salamanca which is located within its territorial boundaries. The Cattaraugus territory, thirty-five (35) miles north of Allegany, totals 22,012 acres. These Seneca lands contain magnificent watersheds, mountains, fertile soils, and an array of natural resources; they are also notably rich in aquatic and terrestrial life.

FIGURE 1.1



The Oil Spring territory, one square mile of land that includes access to Cuba Lake currently has eight (8) tribal residences located there. The Allegany territory has a population of 1,267 members, and includes the City of Salamanca which has a total population of 6,097 (U.S. Census, 2000). The Cattaraugus territory has a total of 2,472 tribal members residing within its boundaries. The Seneca Nation's current total enrolled population including off territory members is 7,388 (Seneca Nation Tribal Enrollment List, September 2004). The two highly populated territories, Cattaraugus and Allegany, are generally rural with several residential areas forming small distinct Seneca communities.

The Seneca Nation is a federally recognized Indian Nation operating under a Constitution originally adopted in 1848. The constitution provides for three branches of government: executive, legislative and judicial. The executive branch is comprised of the President, Treasurer and Clerk. The President and Treasurer also serve a dual role of Chief Executives of their respective territories, supervising a staff of 788 from both territories. Executive offices alternate between the Allegany and Cattaraugus territories with each two-year election.

Seneca Nation Energy Planning

The Seneca Nation of Indians has long understood that energy resources have tremendous value. Recently, however, the Seneca have come to appreciate the significance of controlling the development and management of their own energy resources. The development of natural resources for energy on tribal lands can not only ensure a source of reliable electricity, but could also sustain the Nation's existence as a viable, functioning community. In exercising sovereignty, the Seneca Nation wishes to develop its natural resources as a means to permanent financial stability and to further their political and cultural viability.

The Seneca Nation of Indians, located on three primary territories in Western New York (see Figure 1.1, page 5), has embarked on a long range energy planning mission to establish a strategic plan for energy self-sufficiency. The Strategic Energy Plan will be completed in three phases and will employ both renewable and non-renewable energy for the development of a culturally appropriate, self-sufficient tribal economy. With the long term goal of energy sovereignty, the Nation will endeavor to develop its resources to 1) provide its members with a low-cost source of energy and programs for increased energy efficiency, 2) provide an alternative, competitively cost source of energy for its governmental and business operations, 3) maximize use of renewable sources of energy to achieve an environmentally friendly and sustainable generation plan, and 4) to develop economic development opportunities and job creation within the territories.

The Seneca Nation of Indians has recently completed Phase Two of their energy planning process.

In July 2003, the SNI issued a request for proposal to prepare a long-range energy plan using the Department of Energy's "First Steps Towards Developing Renewable Energy and Energy Efficiency" grant award towards funding for the initiative. This grant was obtained to assist in the development of the Tribe's long-range strategic energy plan.

Phase One was completed in March 2004, funded primarily with Nation funds. The objective of

Phase One was to define the overall goals of the Tribe's long-range energy vision as it relates to energy self-sufficiency, future needs and demand for services, and energy planning and development. Meetings and public gatherings were held to provide a forum for dialogue between tribal leaders, community members and other stakeholders, to collaborate on energy options and ideas for development. Outcomes of the Phase I visioning process included energy self-sufficiency, providing lower cost electricity to the tribal members and businesses, developing renewable or "green" energy, and protecting the environment. The results were published in the Long Range Energy Plan Phase One Report.

Phase II, the basis for this final grant report, included a preliminary energy use and rate analysis, short term (3 years) use projections, a gas well inventory and condition report with recommendations for remediation, preliminary wind assessment research and preparation for a full wind study, and an overview of the natural gas resources and market dynamics. Some organizational development was initiated, including the addition of an Energy Planner to the Nation's Planning Department staff, and a review of the Right of Way, natural gas settlement and various other legal documents were also initiated. Recommendations for utility formation and more in-depth resource assessment were among the report conclusions.

The Seneca Nation is served by primarily two utility providers: Niagara Mohawk (now National Grid Company), and the Salamanca Board of Public Utilities (BPU) in parts of the Allegany Territory. While those communities within the Salamanca BPU boundary enjoy low-cost (approximately \$.04/kwh) electric from the BPU's rural cooperative's hydro-power allocation, the rest of the Seneca Nation residents, government and businesses pay relatively high rates (\$.13- 26/kwh) to National Grid.

Current projections show the Nation's government and business energy demand reaching at least 85,829,519 kwh by 2007, not including any residential demand. At a conservative cost estimate of \$.09/kwh, the Nation makes a \$ 7.8 million dollars annual investment in electricity. This could represent a substantial savings to the Nation if it were invested back into its own economy through energy conservation and development.

PLANNED OBJECTIVES

The planned objectives of this grant-funded planning project included the following goal, as stated in our original grant proposal:

“With the completion of the project, the Seneca Nation of Indians will have a succinct plan to move forward with its energy management and renewable resource development feasibility analyses and project planning. The Strategic Energy Resource Plan will provide us with well-defined goals and community consensus on the Nation’s energy vision, needs and priorities. It will also arm the Nation with the pertinent information and technical expertise to make informed decisions on development potential, so that we may move forward with confidence that our efforts in renewable resource development are well founded in economics and cultural relevance.”

More specifically those objectives included:

1. Retain consultants to provide energy efficiency analysis.
2. Prepare detailed inventory of energy consumption for community, government, commercial and residential buildings on each territory
3. Prepare inventory of energy infrastructure: transmission lines, distribution lines, substations, etc.
4. Provide cost and rate analysis for all electricity accounts
5. Review energy conservation strategies and provider programs
6. Provide detailed energy audit and recommendation for maximizing energy conservation and efficiency
7. Assess business agreements and advise on renegotiation of Rights-of-Way and natural gas contracts
8. Provide overview of natural resource availability, inventory of gas wells and current production realized
9. Define production capacity of current resources
10. Develop long term projections of energy demand
11. Identify renewable energy options that are feasible based on basic criteria for development and context of the Nation’s resources, location, etc.
12. Prepare a comparative analysis of renewable energy options based factors including, but not limited to: cost of development, cost of entry into market, projected export capability, return on investment
13. Develop recommendations based on findings
14. Provide resource guide for solicitation of funding, technical assistance for feasibility study and project development

While the bulk of this planning project centered around general energy planning and renewable resource development, the Nation’s non-renewable resources necessarily required some attention as well. The Seneca Nation has long produced natural gas from its territories. This resource has been the cornerstone of the nation’s energy activities and will continue to play an important role in future development. During this assessment it was confirmed that dramatic improvements may be made to the production capacity and the economic return of this energy source, creating a

solid foundation from which the Nation can leverage its development of renewable sources of energy.

The Seneca Nation understands that a single energy source cannot stand alone in moving towards sustainability. Planning for an evolving energy mix, maximizing our efficient use and marketability of current resources, and augmenting those resources through the development of renewable energy resources, will be the key to achieving sustainability. Therefore, the Seneca Nation has identified several viable options for renewable energy development, and anticipates developing an energy code that reinforces their commitment to maximizing their use in all new construction.

Overall, the project objectives of this grant were successfully achieved, although to varying degrees. Several important breakthroughs were also accomplished that were not stated in the original objectives of the grant, but were within the scope of the strategic energy planning process. In the following section, a detailed review of the project outcomes will be presented.

ACTIVITIES & OUTCOMES

In general, Phase II of the Seneca Nation's strategic energy planning process encompassed the fact-finding mission that provides the foundation for the Nation's Energy Planning Program. It establishes where the Nation's energy program is in relation to where it wants to be, and defines the critical path to guide our initiatives. Our activities fell into three main categories: energy management, organizational and infrastructure assessment, and resource assessment.

Energy Efficiency & Energy Management

Two years of past billing history was retrieved to provide an accurate accounting of the Nation's governmental and enterprise energy usage and costs. Compilation of this data proved to be an extremely arduous task, as the utility provider does not treat the Nation as a volume customer but rather defines each building as a separate account in their system. The Nation's Accounting Department had the tedious task of compiling the old bills and providing photocopies of each for our energy planning staff to subsequently enter the data into spreadsheets. Later in the process we were able to access some of the data on-line through one utility, but still had to compile the accounts one by one, and delineate building classes by account codes and rates, etc., making for a long, drawn-out process.

As a result of the analysis, we concluded that the Seneca Nation of Indians make an annual investment of over \$2.6 million each year in energy costs, with government and enterprise buildings accounting for approximately 4.5 million kWh of electricity use, at an average cost of \$26.42/kWh, and the casino operations accounting for an additional 27 million kWh, at an average of \$.09/kWh.

Projections with the scheduled casino build-outs push the energy use to over 86 million kWh by 2007, representing an annual investment of over \$7.8 million in energy costs.

**Total Seneca Nation
Gaming, Enterprise & Governmental Accounts
Projected Energy Use & Costs**

Account type:	Current Use	Projected Annual Energy Use 2007	Projected Annual Cost 2007	Av. Cost/kwh
Government Offices	4,440,009 kwh	5,120,522 kwh	\$ 603,893.00	\$0.14
Enterprises	48,412 kwh	54,832 kwh	\$ 71,520.00	\$1.30
Gaming Corp.	25,626,253 kwh	80,708,997 kwh	\$6,456,720.00	\$0.08
TOTAL ENERGY	30,114,674kwh	85,884,351 kwh	\$7,132,133.00	\$.08

Seneca Gaming Corp. Energy Use
Current & Projected
(as of 12/15/03)

Project:	Actual Annual Kwh	Actual Annual Cost	Average cost/kwh
1) Seneca Niagara – (actual 2003)	15,114,132	\$1,360,272	\$.09
SNC w/ 1 st build-out (opens 2006)	40,056,997	\$3,605,130	\$.09
2) Seneca Allegany (opened 5/04)	10,512,121	\$367,924	\$.035
SAC w/ Build-out (opens Spr 2007)	23,652,000	\$1,419,120	\$.060
3) Seneca Buffalo (projected 2007)	17,000,000	\$1,530,000	\$.09
TOTAL Gaming Corp. (Projected 2007)	80,708,997	\$6,554,250	\$.08

These numbers do not reflect any residential usage, and a thermal load analysis is yet to be completed for the Nation. Even without that information, it is easy to see why the Seneca Nation is determined to invest in pursuing energy sovereignty.

Recommendations from our consultants include completing a detailed load and rate analysis to determine any fluctuations or opportunities for peak reduction strategies. The energy planning staff is now armed with resources to complete our own energy audits, and have currently scheduled the first building to be reviewed under this format.

In addition to usage and rates analysis, the energy management and efficiency initiatives of this project included the development and institution of a "Seneca Nation Energy Code". The Nation has operated without any building codes until this year, and as it moves into a new era of aggressive construction, the Planning Department gained support to establish standard building codes, including an energy code, to guide the construction specifications for all governmental, commercial, and residential new-builds. After much research and debate, it was decided that these codes follow the International Building Code, and the New York State Energy Code, with some additional items that were extracted from other tribal energy codes. The Codes are currently in the Nation's Department of Justice for review, modification, and distribution. The Engineering Division of the Planning Department is taking the lead on this initiative and insuring that the Nation has certified code inspectors on staff in its construction divisions.

It is our hope that by implementing our energy efficiency standards into the building codes and insuring effective enforcement measures, that the Nation will become more energy-conscious in their building designs and see the potential savings that energy efficiency can provide.

An additional element of our energy management activities that was not anticipated when we applied for this grant, was our involvement in the New York Power Authority's (NYPA) Niagara Power Project re-licensing process. At the urging of a community member, the Nation officially voiced its position as a stakeholder in the re-licensing in (August 2004), and our energy planning staff became immediately involved in the intense re-licensing activities that followed.

Because the Power Project is situated on aboriginal lands of the Seneca, and many of their cultural resources, sacred sites and historically significant property were decimated during its development and expansions over the years, the Nation believed that it was important to pursue settlement and mitigation of any future disturbances to the area. In addition, due to the significant impact that the Seneca Niagara Casino had on the economics of the area, the Nation wished to be included in the allocation of excess hydro-power from the plant. Therefore, we pursued settlement options that included significant cultural and environmental reclamation and mitigation, along with a power allocation and future assistance with our renewable energy development initiatives.

The power allocation settlement alone represented an estimated value of \$4.4 million in savings over the Nation's current projected annual power costs, and a significant replacement of coal-fired power with renewable energy. At this time, the effort to negotiate for an allocation is being thwarted by the Power Authority, our efforts hindered by the Nation's lack of a tribal utility and the legal rhetoric of the Authority. The negotiation process continues, however, and we are

hopeful that even without the power allocation that the Seneca Nation will persist in securing a commitment of NYPA's resources for our renewable energy development initiatives.

The significance of this re-licensing relates not only to the impact of the power project on Seneca aboriginal lands and Seneca economic development efforts, but to the preparation for the impending re-licensing process for the First Energy Power Plant at Kinzua Dam. Through our experience in the Niagara Re-licensing, the Seneca Nation now has a clear understanding of not only the impact of the proceedings, but of the intensity of the process and its demand for thorough preparation and timely response. The forced removal and relocation of Seneca communities during the building of Kinzua is an emotional scar as yet unhealed for the Seneca people. Impacts from the project continue to affect the Seneca from environmental, to socio-economic, to physical and emotional perspectives. The Nation has extraordinary opportunity and responsibility in the First Energy Power Plant re-licensing, and we hope that our experience with NYPA will serve the Nation's interests well in that process.

Another related project that our energy planning staff participated in was the investigation into building a co-generation plant at the Seneca Allegany Casino, to support the power demands that would result from the impending hotel's construction. Energy costs are relatively inexpensive at this casino, which is situated on the Allegany Territory, and within the boundaries of the Salamanca Board of Public Utilities (BPU) thereby benefiting by the BPU's hydro-power allocation.) However, the BPU's allocation did not account for the increased demand of a casino and the casino's load pushes the BPU over its allocation, and into a higher rate category. The BPU also states that once the casino build-out is complete, it will not have sufficient power to handle the increased load. Following its 2005 Infrastructure Assessment Report, the BPU asserts that the Seneca Nation should take responsibility for the infrastructure upgrades of the City's utility system since it is generating the load excess. The Nation has countered that assertion with the argument that the City receives a portion of the casino's proceeds for just such expenses. Currently, the Nation and the City are at an impasse with this issue, however, the dilemma has underscored the need for the Nation to accelerate its utility formation and energy development efforts.

Although co-generation was pursued at the Niagara Falls Casino, with the natural gas bought as a commodity to fire the plant, it is uncertain whether this is the most economical way to produce replacement power for the Allegany Casino. The Nation and casino leadership would like to pursue utilizing the Nation's own natural gas resources for this purpose, however, the energy planning staff recommends against that tact. The distance of the casino from the resources (40 miles) would require feeding the gas into the National Fuel transportation system and then buying it back at the casino site, which in today's market, does not appear most cost-effective. The energy planning staff is exploring alternative energy sources to provide supplemental or replacement energy for the casino and its build-out.

Organizational & Infrastructure Assessment

A detailed review was done on the current organizational structure of the Nation's Utilities Department, including an overview of the Utility Commission by-laws, and the National Fuel Agreement that governs the production and distribution of natural gas through the Cattaraugus Territory. The research was supplemented with both individual and group meetings with members of the department and commission to better understand their backgrounds, capabilities, needs and priorities, and their visions for the Nation's energy program.

One of the outcomes of our initial review of human capacity in the overall energy planning process, was to recommend that an "Energy Planner" position be created to lead the strategic planning process and help coordinate the needs and activities of the multiple entities involved in utilities and energy management initiatives. In May, 2005, we hired this position within the Economic Development Division of the Planning Department to assist the Division Manager with the overall plan.

Currently, the Utility Department focuses on waterline, wastewater and natural gas issues only. Their responsibilities are primarily technical – to insure that the lines are running and the wells are producing, and the treatment plant is operating. The educational and training backgrounds of the staff consist primarily of on-the-job and utility or manufacturer –provided training, and the supervisory and management staff often have little or no technical training in their field, with their management training limited to on-territory work experience. Political change lends little stability in this department, with the Director serving at the discretion of the Administration. Other elements, such as higher paying construction jobs at the new casinos and health related departures have negatively impacted the Department. The Gas Department, in particular, has suffered severe blows with the turn-over of its long-standing staff, leaving a dedicated, yet inexperienced field crew and Supervisor.

The lack of investment in utility maintenance and equipment has been a recurring issue voiced by the department staff and commissioners as they struggle to maintain their operations on bare bones budgets. As departments of the Seneca Nation government, their budgets are restricted and what revenues they do generate (from natural gas sales) are reverted to the General Fund. Past efforts to privatize the Utility Department have been thwarted, for various reasons.

The Utility Commission exists primarily to oversee the efforts of the department and to serve as the gas policy initiators and enforcers. They hold the primary responsibility for drafting and enforcing rates and collection policies, reviewing operational concerns of the Department, and acting as a liaison between the department and Tribal Council. The department does not provide electricity, nor does the commission have the authority to negotiate with service providers or purchase power on behalf of the Nation. They have neither budgetary nor operational autonomy outside of the tribal government structure.

Therefore, a primary recommendation of this study has been to develop a formal tribal utility authority that is autonomous in its financial and management operations, yet accountable to the Tribal Council. A properly structured tribal utility will provide a stable structure within which

the Nation's Energy Program can be maintained and nurtured, without the constant threat of political turn-over. It will afford the Nation the ability to control its energy expenses, provide jobs and create new revenue streams. It will strengthen the Nation's sovereignty by allowing them to exercise authority over their energy resources and economic growth.

The utility could be created on a variety of scales, and does not necessarily require the acquisition of transmission or distribution assets; those decisions would be wrought from the research, risk assessment and business plan preparation that would precede legal structuring. This preparation is requisite due to the geography of the Nation and the multiple utility providers who will be involved in this process. A feasibility study, coupled with a full transmission study will assist in defining the scope and structure that is the most economically viable and most suits the Seneca Nation's needs and market environment. The Seneca Nation has budgeted funds towards these studies and funding has been applied for through the Department of the Interior for this purpose.

A preliminary infrastructure assessment was also completed within the scope of Phase II. This included field work to inventory gas wells, inspect gas distribution lines and meters, map electric and gas transmission lines and right of ways, and review equipment inventories and conditions. The infrastructure assessment was completed with the assistance of the Gas Department staff, the Nation's petroleum engineering consultant, the Planning Department's GIS Division, and representatives from the Bureau of Land Management (BLM). The Salamanca Board of Public Utilities was also helpful in regard to mapping the electric transmission, distribution and substations in their territory, however, this was not the case with the Utility provider on the Cattaraugus Territory, therefore, some of the detailed GIS data on electric assets on that territory have yet to be mapped.

The City of Salamanca also commissioned an electrical infrastructure assessment based on the increased energy demands resulting from the addition of the Seneca Allegany Casino (as referred to in the "Energy Efficiency & Energy Management" section of this report).

The gas well inventory was finalized in Fall, 2004 after three months of field work by the GIS Division, with the help of the BLM and the Gas Department field crew. Out of 148 original wells drilled on the Cattaraugus Territory, 48 were located and digitally mapped. Only 7 wells are currently producing, and many of those are either seasonal producers or are not producing to capacity. Only one well on the Allegany Territory is still producing for the Seneca Nation.

The BLM staff assisted in the cataloging the wells on the Cattaraugus Territory to insure that the Nation had accurate condition reports on each well. This enabled us to prioritize the well remediation work, and plugging and abandonment that needed to be done, and funds were solicited from the BIA to complete this work. Some funds were secured and more were recently applied for under the Department of Interior's Mineral Assessment Program. These monies, if secured, will be used for compiling data from the wells, completing seismic studies to assess the gas reserves and developing an infrastructure upgrade plan to complete pipeline repairs and extensions of service to support increased production and distribution on the Territory.

Considering many of the original wells had been drilled on leases in the early 1900's, it was impossible to locate most of the old abandoned wells. Over the years, well heads have been

grown over, removed, buried, etc., and even when wells were located by our project team, the historical survey information was found to be inaccurate in many of the cases. It is believed that only an on-going incentive program to have community members report suspected abandoned wells will provide the Nation with a more complete inventory.

The abandoned wells are important to the Seneca Nation because many have become health and safety issues due to leaking of gas at the well head or surface. In the early part of the century, standards for plugging and abandonment (P&A) did not exist, therefore many of these wells were filled with rock or logs and deserted, only to have the fill break down over the years, allowing the natural gas to leak through. The Well Inventory notes these instances, with priority given to those close to residences, businesses or the aquifer that should undergo proper P&A. One of the worst examples is well CAT-45 which is an abandoned well which sits over the Nation's aquifer, four miles off the road, in a swamp (with beaver dams), that is leaking moderately at its submerged head. Estimates on reaching and drilling this well (to complete P&A) is estimated at \$60-75,000 due to its remote location. Such is the nature of the Seneca Nation's natural gas legacy.

The Natural Gas Program Assessment included a market analysis and organizational review that provided the following recommendations:

- The Nation could maximize its return on improvements to the producing gas wells in the current market. While market dynamics are ideal for increased production and profit, the Nation's gas infrastructure is in need of major improvements. This work is costly and availability of drill rigs and operators is backlogged.
- Co-generation is definitely an option given the secondary research of the gas reserves and a market for the combined heat and power. However, producing power for the casino on the Allegany Territory may not be cost effective, given the cost of transportation. Distributed generation for the benefit of the Nation's impending construction could have better economics. A thorough cost analysis should be done to establish the economics of such a project.
- Line loss creates an inequitable situation with the "balanced" payment agreement with National Fuel Corp.
- Meter placements should be relocated to account more accurately for production into the lines
- Right-of-ways need to be reviewed and possibly re-negotiated. It appears two gas transportation lines cross the Cattaraugus Territory without ROW agreements, and others may be under-valued in this market.
- The New York region is desperate for more gas storage, and the Nation's reservoir is an attractive candidate. A reservoir study would determine the structural integrity and confirm whether this is an option for the Nation to consider. A review of previous Seneca legislation would have to coincide to insure that the moratorium that once was issued on gas storage is not valid within the context of a new plan.
- The lack of a capital program within the gas department restricts the revenue potential and expansion of the program. Infrastructure is in need of significant upgrades, and a full infrastructure assessment with cost estimates is

recommended. Equipment is also in need of replacement or purchase; the capital program should also address new equipment costs to provide the field crews with the necessary tools to have an effective operation and maintenance program

- The current structure of the utilities department and gas department are not effective for the long-term viability of the gas or energy program. Political instability results in constant turn-over of staff, and the program is not funded adequately to allow for the capital, personnel, and training required to operate a self-sustaining utility. A detailed feasibility study to determine the most appropriate organizational structure is recommended.

Renewable Resource Assessment

The Seneca Nation has used a two prong approach to its energy development planning. Understanding that a sustainable energy plan cannot be based on a single energy source, the Nation is committed to developing renewable energy to supplement its current resources. While natural gas will play an important role in the Strategic Energy Plan, the intention is to leverage that development to finance the development and application of renewable energy sources, such as wind, ground source heat, and biomass for its long term energy program.

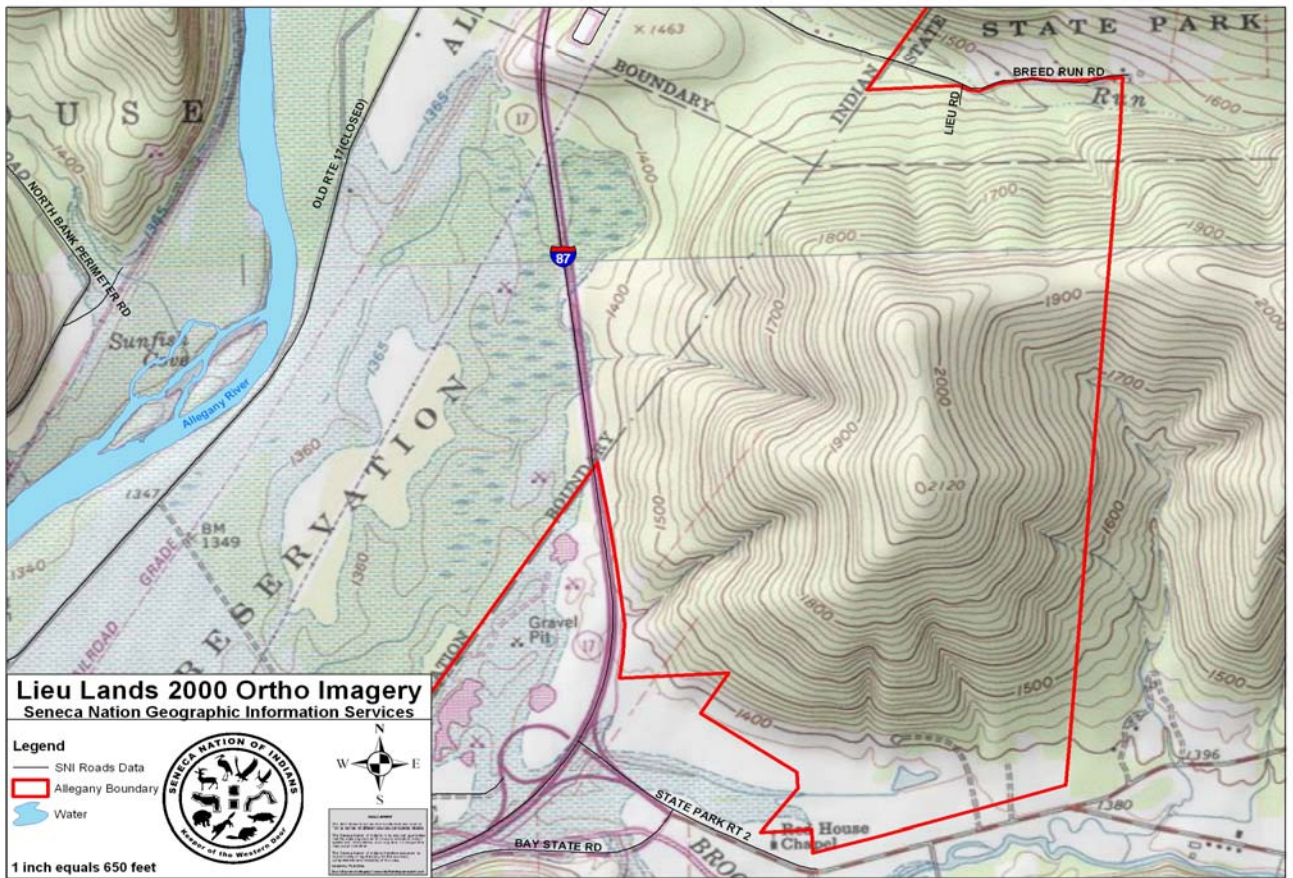
Ground source heat pump (GSHP) technology has already been used with a great deal of success in the nation's Pre-School facility on the Cattaraugus Territory. During the course of this grant project, the energy planning staff participated in the Salamanca School District's assessment to convert the Central School building to the same technology. Originally, the engineers had recommended an open loop system, but were successfully re-directed to designing a closed loop system which promised to be a more environmentally sound option. Construction of the system will commence this Spring and is scheduled to be completed prior to the Fall term.

Through this grant period, we have studied the effectiveness of this technology at the Pre-School, as well as touring and meeting with facility managers of two other regional educational institutions who have installed significant GSHP systems. The level of satisfaction and savings point to a tremendous success rate for this technology in our area, and we are intent on assessing the potential for residential, as well as commercial, application. The energy planning staff is advocating for use of GSHP technology in the new construction plans for the Nation's government and commercial buildings, which are planned to follow an aggressive development schedule. Additional investigation into the feasibility of retrofitting residential units with this technology in order to replace costly electric and propane heating systems, is also a priority.

The primary focus of our renewable development efforts has been on wind. Preliminary research included review of data and maps from True Wind, the State and our internal GIS Department to identify whether viable wind existed on the territories, and whether the areas that proved to have a wind resource were developable. Potential sites were identified on both the Cattaraugus and Allegany Territories, and an anemometer loan application filed with the DOE/NREL. After a review with NREL and some additional research, it was suggested that we focus on the Allegany "lieu lands" site for our first study, and apply for a 50 meter tower since the tree heights on that site reached 65-70feet. In December 2005, we received approval for a "tall tower" anemometer loan, and anticipate a Spring 2006 installation.

The site is on a ridge facing the prevailing south-westerly winds, with excellent access to transmission. While there are raptors (specifically bald eagles and osprey) nesting in the surrounding area, preliminary research suggests that their flight patterns keep them close to the river's shoreline and rarely up near the ridge line. More avian studies will have to be completed, of course, to insure the birds (now numbering 36), nor their breeding patterns are disturbed.

Lieu Lands Anemometer Site



The Seneca Nation has long been interested in pursuing wind power on their territories, yet the usual questions and concerns persist among Tribal Councilors and community members. To address these concerns, we scheduled a field visit to the Fenner Wind Farm, outside of Syracuse, NY to see the turbines up close and talk with the local project contacts.



July 2005 Field Visit to Fenner Wind Farm with Tribal Councilors, community members and members of the Environmental, Planning and Facilities Management staff. (more photos in Appendix IV)

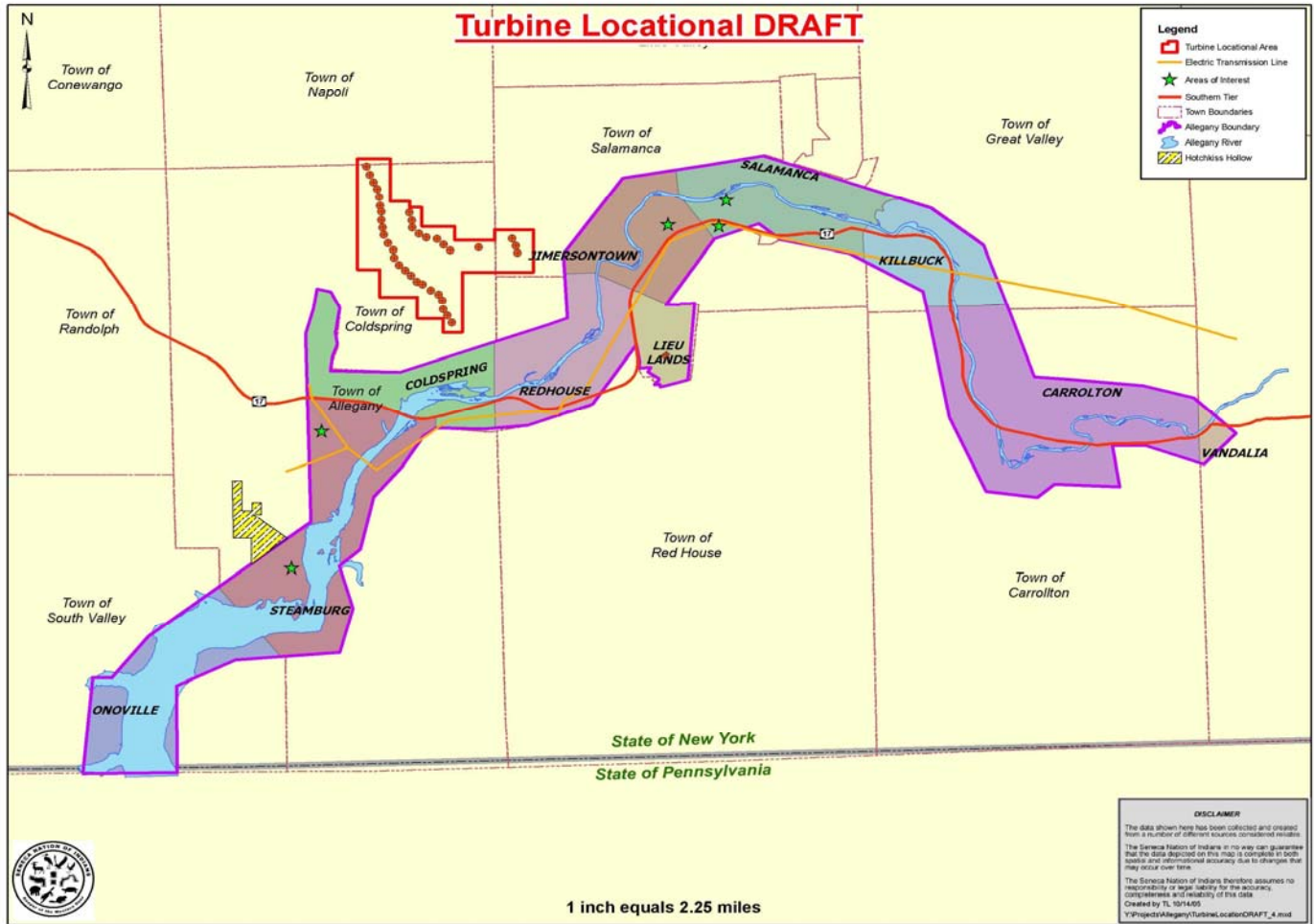
This visit was instrumental in alleviating many of the concerns of the group regarding aesthetic impact, noise, operation of the turbines in adverse conditions, etc. The Councilors in attendance appeared to be engaged and enthusiastic about the Nation's prospects to develop its own wind project.

One of the challenges for the Seneca Nation's wind development initiative is the lack of sufficient land mass in the prime wind areas to support a commercial size development. Many of our targeted sites are capable of only accommodating 1-3 turbines, which would be beneficial for distributed generation, but exclude any wholesale generation. In the course of our investigation this past year, we identified a potential opportunity to partner on a commercial project that is being planned almost adjacent to the Allegany Territory.

Everpower Corporation, in partnership with RES, Inc. received funding from the New York State Energy Research and Development Authority (NYSERDA) towards their development of a 60 MW wind farm in Cold Springs, New York. The site secured for the development is high on a ridge, overlooking Interstate 86, and (as coincidence would have it) the "Lieu Lands" site of the

Seneca Nation's proposed wind project. The Cold Springs project proposes approximately 36 1.5 to 2.0 megawatt turbines on the site.

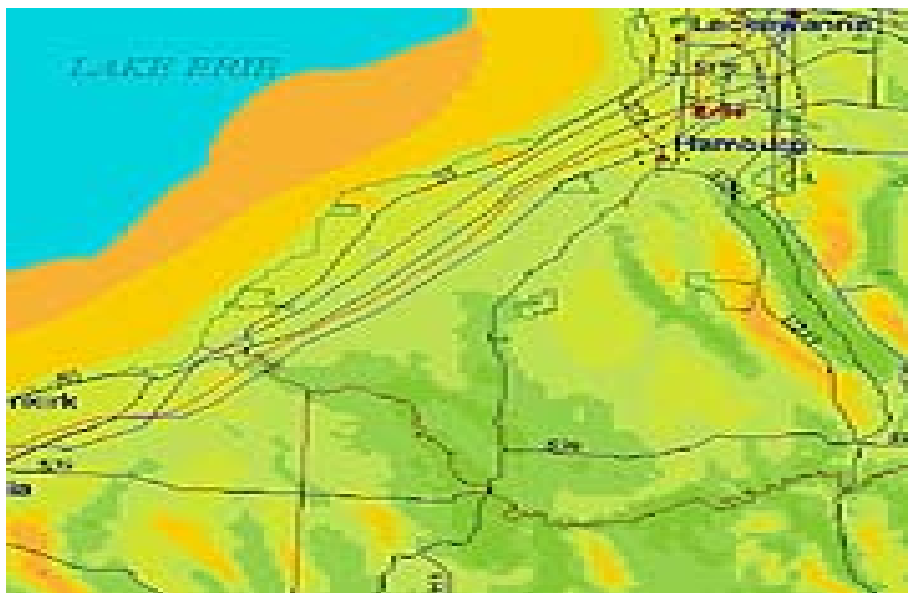
Figure 3.2 – Cold Springs Wind Farm in relation to Seneca Nation Territory & SNI wind sites.



The Cold Springs Wind Farm represents an opportunity for the Seneca Nation to enter the wholesale power market, if they choose to partner with Everpower Corp. at that level. The Nation may choose to simply endorse the project, purchase power from the project, enter into a right of way agreement for transmission access, or become a 51%+ partner in the project; many partnering options are available. With the proximity of the project lands to the Allegany Territory, a partnership that includes acquisition of the lands would allow the Nation to expand its land base, making that option very attractive. As the project continues its research over the next year, all options will be explored, and Everpower has assured the Nation that they will be happy to share their data with us to supplement our own Anemometer and environmental research for that area. Other opportunities to “piggy-back” that project’s development may also prove beneficial to the Nation in terms of sharing equipment, personnel, etc.

On the Cattaraugus Territory, the potential for wind also exists, and it is our intention to develop generation on some scale there as well.

Figure 3.3
TrueWinds Map – Cattaraugus Territory



The most viable winds on that territory are off-shore, and the Nation would be very interested in pursuing a demonstration project to develop that project, however, many challenges will persist for such a progressive development. We have been approached by a group of Canadian developers who wish to explore the project with us, but much research needs to be completed in the interim to establish the relationship of the Nation’s territory boundary to the international boundary in Lake Erie, and to identify the potential sources of contention among environmental and recreational opponents of off-shore wind.

Other opportunities exist on-shore on the Cattaraugus Territory as well, our preliminary investigation points to three areas where winds might be commercially viable, although land considerations, i.e. leases with nation members, use of fee land, etc., need to be explored further before a full assessment can be made.

Overall, the Seneca Nation is enthusiastic about their opportunities to develop wind power on its territories, whether on a distributed generation scale or as wholesale generation. Our goal is to have a project installed by 2008, and hopefully by that time, the Nation will have its Tribal Utility Authority under development, strengthened relationships with its utility providers and a more solid infrastructure capable of supporting additional generation from both renewable and non-renewable sources.

NEXT STEPS

The activities completed in Phase II have provided the Seneca Nation with a solid foundation upon which it can implement a comprehensive energy program. Data was compiled to define the Nation's energy use, and to project its energy needs into the future, and issues were identified that promulgate costly electric expenses through-out the Nation's government, enterprise and gaming operations. Relationships and programs with the Nation's utility providers were reviewed and recommendations made to improve the dialogue and cooperation between the entities. The preliminary investigations into the Nation's energy resources point to opportunities for development of both renewable and non-renewable energy and, specifically in natural gas, biomass and wind. We have also identified opportunities in energy efficiency, specifically using combined heat and power and ground source heat pump technologies.

In the coming year, all of this research will be compiled into a Strategic Energy Plan, a living document that will represent the road map to the nation's comprehensive energy program. A draft outline of this document is included in Appendix III. This document will detail the Nation's energy vision and objectives, it will house the historical and updated information regarding the Seneca Nation's energy use, rates and load analyses, and its projected energy demand, it will document the historical and on-going energy development efforts, and it will detail recommendations and action plans to guide the development and implementation of future energy efficiency, energy management, energy development, and organizational development programs. These programs will form the basis of a sustainable energy program.

Key to the success of a sustainable energy program at the Seneca Nation is the formation of a tribal utility that is autonomous yet accountable to the Tribal Council. Without this organizational framework, the energy program will continually struggle, if not falter, due to the instability of tribal politics and governmental transition. Additionally, the Utility must be able to operate as a business entity, rather than as an arm of government in its management and financial operations. Their budget must be based on a self-sustaining operation, where revenues generated are re-invested in the organization's operation and programs, rather than diverted to the government's general fund, and rates and policies must be based on good business practice rather than the popular vote.

In the next phase of energy planning, it is recommended that a feasibility study for tribal utility formation is completed to provide additional insight into the most effective organizational structure and scope for the utility to satisfy the immediate needs and achieve the long term energy vision of the Seneca Nation. This study would provide a critical path for the organization's development, including its legal structure, human capacity and capital plans. It would present a model business plan and financing options for Council's consideration, and offer

a phased development plan for asset acquisition and management. We hope to initiate this study in Spring, 2006 and have budgeted the funds to accomplish it.

The implementation of an energy policy or “Seneca Nation Energy Code” is another significant initiative that the Seneca Nation will introduce to insure that future development on the territories maximizes the energy efficiency measures available. The Nation has commenced on an aggressive construction schedule to accommodate the growing programs and staff requirements of its governmental and enterprise operations. It is vital that this new construction follow energy efficient design specifications to support the Nation’s long term energy vision. Energy efficiency will not only cut costs, but will provide an example of responsible resource management and environmental stewardship to enrolled members, native and non-native communities and neighboring municipalities. Instituting renewable energy resources and energy efficient technologies into the Nation’s government and commercial buildings will reflect the Nation’s commitment to the sustainability of its energy resources and program.

As the energy audit is completed, retrofits will be recommended to improve energy efficiency in the government buildings on both territories. As the Nation begins tracking their usage and rates more effectively, the savings should become apparent.

Relationship building with the Nation’s utility providers must continue to insure that provider programs are maximized and issues addressed in an equitable and timely fashion. We will be working with National Grid to aggregate the Nation’s multiple accounts and secure an account rep to work with us on a regular basis. The Salamanca BPU will require similar attention, and the Nation will have to take a cooperative yet firm approach to the utility and infrastructure issues on the Allegany Territory.

A comprehensive natural gas assessment is a costly but necessary component of the Strategic Energy Plan. The undertaking will require a significant commitment of staff and capital resources. We would like to initiate the reserve study pending funding assistance from the Department of the Interior Mineral Assessment Program (MAP), but additional funding will be required by the Nation to support the infrastructure upgrades, well remediation and equipment to support increased production. The MAP grant monies will provide the Nation with detailed seismic studies to verify the reserve capacities and its structural integrity. Based on that information, the Seneca Nation will have to decide whether they are capable of planning a capital improvement project to increase production and expand distribution capabilities. The formation of a tribal utility will facilitate this long term planning if/when it is approved.

From a renewable standpoint, the Nation is anxious to pursue a wind project in the coming year. Certainly the requested funding from the MAP grant, if secured, would help expedite this process; the application specified the retention of consultants to complete a full transmission study and a preliminary environmental assessment to support this development. If the funding is not secured, other options may include soliciting partnerships through an RFP process, or taking advantage of the new tax free bonds legislation to finance a project. The Seneca Nation is committed to developing a wind project of some size, but cannot afford to finance the complete development, so funding assistance will be required to achieve this goal. The Anemometer study will hopefully commence on the Allegany Territory this Spring, and the results of that study will

determine the viability of a project in that area. If the results prove marginal, we will endeavor to locate another site.

The Seneca Nation would also like to explore the potential for a biomass project this coming year, and has been approached by private investors who seek to develop such a project on territory. A feasibility study has already been completed, and we are currently in discussions on the economics and partnering strategies that are to be proposed. As this is still in the screening stage and has not yet been presented to Tribal Council, we are not at liberty to disclose more of the particulars. The project does appear to have merit, and hopefully a situation may be negotiated that will complement the Seneca's overall Energy Plan.

CONCLUSIONS

By awarding the Seneca Nation of Indians with a "First Steps..." grant, the Department of Energy enabled us to establish a solid footing for the Seneca Strategic Energy Plan. The Nation now has a clearly defined vision and objectives for its energy program, and core information upon which to build its critical path for achieving that vision. In the years to come, each element of the Energy Plan will be nurtured towards that end, and a comprehensive program developed around the information that we have compiled.

This grant program and the activities associated with its completion has heightened the Nation's capabilities in energy planning, and armed the staff with information and resources previously unavailable or unfamiliar. What were disjointed or incongruous efforts in the past have merged into a comprehensive approach to energy planning, and coordination is consistently improving to maintain the overall energy vision. The consultants provided a guided, do-it-yourself approach, which accelerated the staff's competencies as we completed each element of the planning process. Their insight into tribal governance and the dynamics of energy development in Indian country was very beneficial and their mentoring invaluable. We can now deal confidently with our utility providers, state and federal resource agencies, consultants and developers, asserting Seneca sovereignty in matters regarding its energy resources.

As we conclude this phase of the energy planning process, the Seneca Nation is now armed with clear direction to implement its energy efficiency and development strategies. We have an overview of the viable renewable options to support our natural gas resource plan, have defined the missing pieces of our energy planning puzzle, and identified the resources to complete the picture. We have developed policies and programs to heighten energy efficiency standards in all nation buildings, whether governmental, commercial or residential. We have identified opportunities to implement technologies such as ground source heat pumps, solar panels, combined heat and power, and distributed generation in our new construction, with hopes to develop a LEEDS certified Archives & Collections building in the near future.

Through the funding assistance of the DOE we have been able to ascertain the energy needs of the Nation, looking to the future to determine the issues and opportunities in meeting that demand. We now have the capability to be proactive in energy matters, and in providing for the growth of the Nation's enterprises and communities.

Through this grant and the on-going support of NREL, the Seneca Nation is assessing the viability of a wind project, hopefully to be developed on territory within a two-to-three year timeframe. We have established the need for organizational development and made progress towards building human capacity to lead and drive the energy program. We have a significantly better understanding of market dynamics and the regulatory environment as they relate to the Nation's energy initiatives, and have secured the support of the Nation's leadership for the energy program's continued progress.

As we conclude this phase of our energy planning and conclude our "First Steps..." grant program, we wish to thank our Program staff at the DOE and NREL for their support, assistance and mentoring over the funding period, and look forward to future collaborations.