Located in Shawnee, Oklahoma

- Citizen Potawatomi purchased allotment lands consisting of a small 900 square mile parcel
- The largest part of the Potawatomi made their way to the new reservation in the 1880s.
Citizen Potawatomi Nation
Tribal Headquarters, ca. 1973
Tribal Leadership

John A. Barrett Jr.
Chairman

Linda Capps
Vice Chairman

D. Wayne Trousdale
Secretary/Treasurer
## Economic Impact

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003 Community Impact</td>
<td>$84,979,660</td>
</tr>
<tr>
<td>Enterprise Employees</td>
<td>$12,041,845</td>
</tr>
<tr>
<td>Enterprise Expenditures</td>
<td>$38,476,036</td>
</tr>
<tr>
<td>Non-Enterprise Employees</td>
<td>$12,104,616</td>
</tr>
<tr>
<td>Annual Economic Impact</td>
<td>$84,979,660</td>
</tr>
</tbody>
</table>

| 2002 Community Impact    | $73,087,828     |
| 2001 Community Impact    | $56,642,420     |
| 2000 Community Impact    | $48,006,270     |
The Tribal Administration Building houses:

- Administrative Offices
- Enterprise/Tribal Accounting
- Tribal Rolls
- Employment and Training
- Cultural Resources
- Child Development Center
- Office of Self Governance
- Title VI Elderly Program
- Human Resources
- Purchasing
- Networking
- Occupied February 1998
Citizen Potawatomi Population

CPN Tribal Member Densities based on 5 Digit ZIP Codes
Tribal Court

- In operation since 1986
- 7 Supreme Court Justices
- 3 District Court Judges
- One prosecuting attorney
- One public defender
- One court clerk
- Jurisdiction over any Citizen Potawatomi - anywhere
- Civil jurisdiction over non-Indians
Jurisdictional Programs and Activities

Health Complex
Clinic ~ Pharmacy ~ CHRs
Contract Health ~ Optometry
Dental ~ Audiology
Behavioral Health ~ Substance Abuse
FireLake Fitness Center
Child Development Center Expansion

- One of Only Two Two-Star Child Development Centers in Pott. County
- Current Capacity - 400
- 200-Plus Slots Added in 2004
First National Bank & Trust Co. of Shawnee

Main Bank
With solid earnings performance for the past six years, First National Bank is the fastest growing bank in Shawnee and the community's only locally owned bank.
FireLake Golf Course
Potawatomi Gift Shop
FireLake Farms

1,200 Acres (Approx.)
1 Full-time employee
Best suited for agriculture production
• Hay
• Horticultural Produce
• Field Crops
San Remo’s Cafe at FireLake
FireLake Discount Foods
FireLake Discount Foods
Regional Tribal Functions

- To provide tribal members an opportunity to interact with tribal officials
- To assimilate and distribute information to the regional members
- Only tribe in the United States that hosts regional meetings

The first regional council meeting was held in 1984.
Tribal Rolls

- Enrollment
- Genealogy Research
- Provide and maintain photo ID cards
- Tribal Scholarships
- Burial Insurance Program
Mail-Order Pharmacy

• Plan A – Tribal members 63 OR OLDER. CPN will pay 100% of the cost for drugs on the formulary

• Plan B – Tribal members YOUNGER THAN 63. 100% co-pay by tribal member.
Health Aid Foundation

- Eyeglasses - Contacts
- Hearing Aids - Crowns
- Dentures - Partial - Bridges
- Prosthetic Devices
- CPAP Machines
- Wheelchairs – Mobile Chairs
- Mobile Chair Ramps for Vehicles
- Prescription Sunglasses (w/Doctor’s Statement)

Must have been born by December 31, 1971 or be at least 1/8 Citizen Potawatomi
Scholarships and Education Programs

• Nishwamen Scholarship at St. Gregory’s University
• Tribal Scholarships
• Higher Education
• Housing Allowance
• All programs have strict deadlines
CPN Housing Authority

• Emergency rehabilitation loan program

• Down payment and closing cost assistance grant
Cultural Resources

- Preserve Potawatomi Culture
- Language Classes
- Historic Preservation
- Archaeology
New Cultural Heritage Center
Family Reunion Festival
Final Weekend in June Annually
The Citizen Potawatomi Nation seeks to create long-term energy strategies, explore development of tribal utilities, and analyze renewable energy and energy efficiency options.
Project Participants

- CPN Chairman – Mr. John A. Barrett Jr.
- CPN Vice Chairman – Linda Capps
- CPN Secretary-Treasurer – Mr. D. Wayne Trousdale
- Director/Self-Governance – Ms. Rhonda Butcher
- Project Coordinator – Mr. Art Muller
- Public Works Director – Mr. Richard Kunze
- Housing Authority Director – Mr. Robert Carlile, Ph. D.
Team Leader – Marvin Smith, Ph.D.
Principal – James Bose, Ph.D.
Principal – Richard Beier, Ph.D.
Principal – Young Chang, Ph.D.
Engineer – Randolf Perry
Engineer – Fred Schroeder
All associated with Oklahoma State University and International Ground Source Heat Pump Assoc.
Objective One

- Conduct planning sessions with the Citizen Potawatomi Nation Strategic Energy Planning Team. The goal is to set a baseline assessment and create an energy vision.
Objective Two

- Conduct an analysis of energy efficiency opportunities to reduce overhead and increase the efficiency of energy consuming devices, improve design of the overall system, switch to a more efficient system, improve control of the system, improve maintenance, and reduce energy demand in Citizen Potawatomi Nation buildings.
Objective Three

- Conduct analysis and study feasibility of geo-thermal resources, wind-generation, propane and natural gas distribution systems, and the future of hydrogen and fuel cells for production, transportation, and storage of large quantities of energy.
Objective Four

- The Citizen Potawatomi Nation will address electricity restructuring by increasing our participation beyond continuing to purchase electricity from the local distribution utility. Determining the opportunities and pitfalls of electricity restructuring will prepare the CPN to protect and serve tribal interests.
New Projects

- None currently with DOE
- Plans are to implement recommendations resulting from the current project
On Going Projects - Project Status

- Made an assessment of the primary sources of energy consumption on CPN land
- Example Results:
  - Water well cost to be made an energy asset
  - Integrate current waste heat into new business
  - Utilize close proximity of primary sources of energy consumption to become an advantage
New CPN Heritage Center

Installing geothermal heat pump system to heat and cool the building. Original design used vertical boreholes for energy source.

Result of assessment of energy consumption in CPN operations led to new potential. Use water that is already being pumped into ponds on golf course as the heat pump energy source.
A large source of heat energy: supply a car wash, or greenhouse, or laundry or similar business.
On Going Projects-Project Status-Example

- Most of the primary sources are in close proximity of each other
- Led to a guiding statement:
  - Maximize economic opportunities through energy efficiency, energy system integration and energy management
  - Thus evolving into: creating jobs, establishing businesses, reducing energy consumption, cost reduction, and obtaining competitive advantage
On Going Projects - Project Status

- Assessed the characteristics and potential of energy systems that could impact the generation/conservation of energy

- Example Systems and Results:
  - Geothermal Energy
  - Wind Energy
  - Biomass
  - Combined Heating and Power (CHP)
The CPN already uses geo-thermal energy in its health clinic.
The CPN & Geo-Thermal Energy

The CPN’s Cultural Heritage Center, now under construction, will feature use of geo-thermal energy.
GHP Commercial Installation
Low Cost Housing

- 3 Bedroom
- 960 square feet
- Heating, Cooling and Water Heating averages $17/month at $0.07/kWh
New CPN Housing Project

Previous design and construction used conventional heating and cooling.

New housing project (25 duplexes) will use the environmental friendly GHP system for each unit. Energy and cost savings and comfort will be experienced.
High Potential for New GHP Business

CPN has the Requirements:

- Champions
- Business knowledge
- Drilling experience
  - Vertical boreholes and water wells
  - Horizontal boring
- Construction experience and talent
- Currently implementing them into CPN buildings
Champions to Lead the GHP Business

John A. Barrett Jr.
Chairman

Linda Capps
Vice Chairman

D. Wayne Trousdale
Secretary/Treasurer
Wind Energy

◆ CPN entered agreement with OG&E to purchase electricity generated by wind turbines
◆ NREL has made available through Native American Loan Program an anemometer to measure wind characteristics on CPN land
◆ Currently wind energy requires Tax Credit for viability, this has been extended by congress
◆ This technology is modular and highly additive
Oklahoma Wind Potential

Wind Power Class

- Poor
- Marginal
- Fair
- Good
- Excellent

Lakes/Ponds

Wind Resource at 50 meters (164 ft) AGL
Neural Network Computer Model
Creation Date: 02/22/02
Output of Typical GE 1.5MW Turbine

![Graph showing power produced vs. wind speed for a GE 1.5MW turbine. The graph includes data for both '02 wind speed and generator output.](image_url)
How Well Does Wind Generation Fit the OG&E System?

[Graph showing the relationship between temperature and available wind energy, with bars for wind energy MWH and a line for load.]
OSU Ethanol Strategy

Biomass—grow, harvest and transport

Gasifier—Convert biomass to producer gas

Bioreactor—Ferment producer gas to ethanol (and other useful products)

Potential Impact

100 MGY Ethanol Plant

Over $14 M/yr to farmers

Bioconversion Facility
(30 plant personnel = $1.2 M/yr)

Integrated harvesting system (260 laborers = $6.5 M/yr)

Transporting biomass from field to plant (90 truckers = $2.3M/yr)

Switchgrass
Will grow anywhere in U.S.

High biomass yield with low input
Potential for CPN involvement in Biomass projects

- Citizen Potawatomi Nation located between two of eleven potential plant locations
- Pilot plants expected in 2 to 3 years.
- Current projections are that the OSU process can produce ethanol at a breakeven price of $0.758/gallon.
Combined Heating and Power (CHP)

Recent advances override earlier problem:

• Effective heat recovery from generating equipment can improve the return on investment

• Also this displaces air emissions from boilers

• If CHP coupled with economic heat recovery then benefits can be obtained for only 2000 to 3000 per year (1 year = 8736 hours)

• Efficiencies now 75 - 85% for natural gas fueled
On Going Projects-
Activities To Be Completed

- Finalize the cost benefit analysis for GHP’s in specific CPN facilities
- Finalize feasibility study of creating a GHP Tribal Enterprise
- Expand upon and document the potential energy savings of suggested methods for existing major energy consumers
- Extend the approach to create integrated businesses using heat from existing systems
- Analyze the potential of a Tribal Utility or a feasible option such as a CHP
On Going Projects - Future Plans

- Prioritize and implement the potential methods of reducing energy costs that were determined from the study.
- Prioritize and implement the options of business development revealed during this study.
The earth is like a solar battery absorbing nearly half of the sun’s energy. The ground stays a relatively constant temperature through the seasons, providing a warm source in winter & a cool heat sink in summer.
Integrated System
Service Centers
Integrated System
Hybrid System

Figure 1.3 Hybrid System Using A Cooling Tower
Two Office Buildings and Eight Residences with Hybrid Ground HEX System
The Texas House

- Energy Conserving
- 4 Heat Pumps for Zone Control
- Vertical Heat Exchanger Field
- Very Proud Owner
Geothermal School Annual Energy Operating Costs Comparison

Total Energy Cost per Square Foot

- Arnold High - Closed-Loop Geothermal System (completed Aug. 2000)
- School A - Gas Boiler/Chiller System (Updated w/ new equipment 1996)
- School B - Multiple Systems

Avg - 39% Savings

$0.73

275,271 SF

$1.21

228,678 SF

$1.18

171,185 SF
Advanced Ground Source Heat Pump

Generation efficiency approaches 55% compared with 35% for a steam cycle alone. GSHP require only 6 kWh$_T$ from the source to provide 10 kWh$_T$ to the building due to the increase in power plant efficiency.
Summary
Load to Source Ratios

1. Gas/Electric HVAC 0.68
2. Air-Source Heat Pump 0.58
3. Ground Source Heat Pump 1.11
4. Advanced Ground Source Heat Pump 1.67