

AUGUSTINE BAND OF CAHUILLA INDIANS

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Energy Conservation and Alternative Energy
Resources Development

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AUGUSTINE BAND OF CAHUILLA INDIANS

- Eight-member tribe with flat, developable 540 acre reservation in rapidly urbanizing area. Limited but capable management resources.
- Reservation undeveloped except for small casino and temporary Tribal offices. Regional economy would support suburban retail and office development.
- Tribal Chairperson is highly motivated to make the Reservation a model of energy planning and conservation.

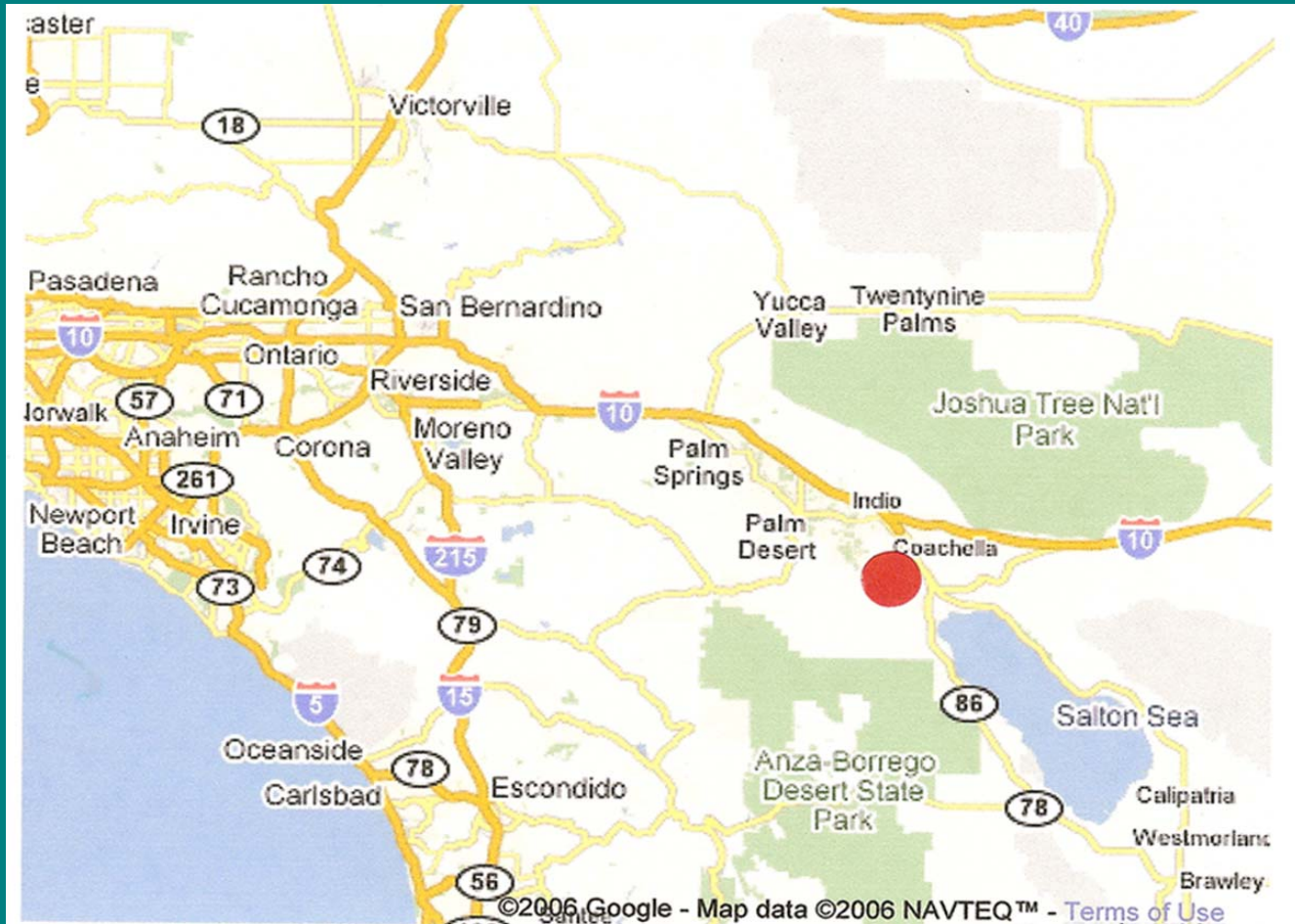
PROJECT OVERVIEW

- Conservation is highest priority
 - Least expensive policy option.
 - Incentives may be considered.
 - Regulation is the primary approach.
- Alternative Energy Resource Development
 - Photovoltaics
 - Solar thermal applications
 - Co-generation)

PROJECT LOCATION

- Eastern Coachella Valley, approx. 25 miles east of Palm Springs, CA.

Project Location



PROJECT LOCATION/CONTEXT

- Topography and Other Factors
 - Essentially flat and developable
 - Seismic hazards-highly fractured geology with multi-directional faults.
 - Environmental constraints-blowing sand and dust
- Geography and Weather
 - Temperature extremes (20°F to 120°)
 - Solar exposure
 - Wind velocity and duration
 - Risk of local climate change
- Development patterns
 - Proximity to airport
 - Increasing residential development
 - Uncertainties (economic and policy)

PROJECT OBJECTIVES

- Develop integrated energy, economic development and land use strategy.
- Develop policies to require and encourage conservation.
- Estimate the capital and operating costs and payback periods for selected alternative energy sources.
- Estimate the extent to which future energy demand can be reduced through conservation measures and the cost of such measures.
- Clarify the extent, if any, to which the Tribe is willing to subsidize energy efficiency and environmental responsibility.
- Design and prepare bid packages for alternative energy development project.

INITIAL QUESTIONS AND ISSUES

- What are the detailed energy objectives of the Tribe?
- To what extent, if any, is energy conservation consistent with economic development in general and the economic development objectives of the Tribe in particular?
- To what extent can conservation reduce the future energy consumption of the Tribe compared with prevailing standards for similar land uses?
- How should we forecast and measure the energy and other environmental effects of policies and projects. To what extent are these measures a function of public policy as opposed to market prices?
- To what extent, if any, is the Tribe willing to absorb an increase in delivered energy costs in order to reduce its consumption of grid-provided electricity?

MORE ISSUES AND QUESTIONS

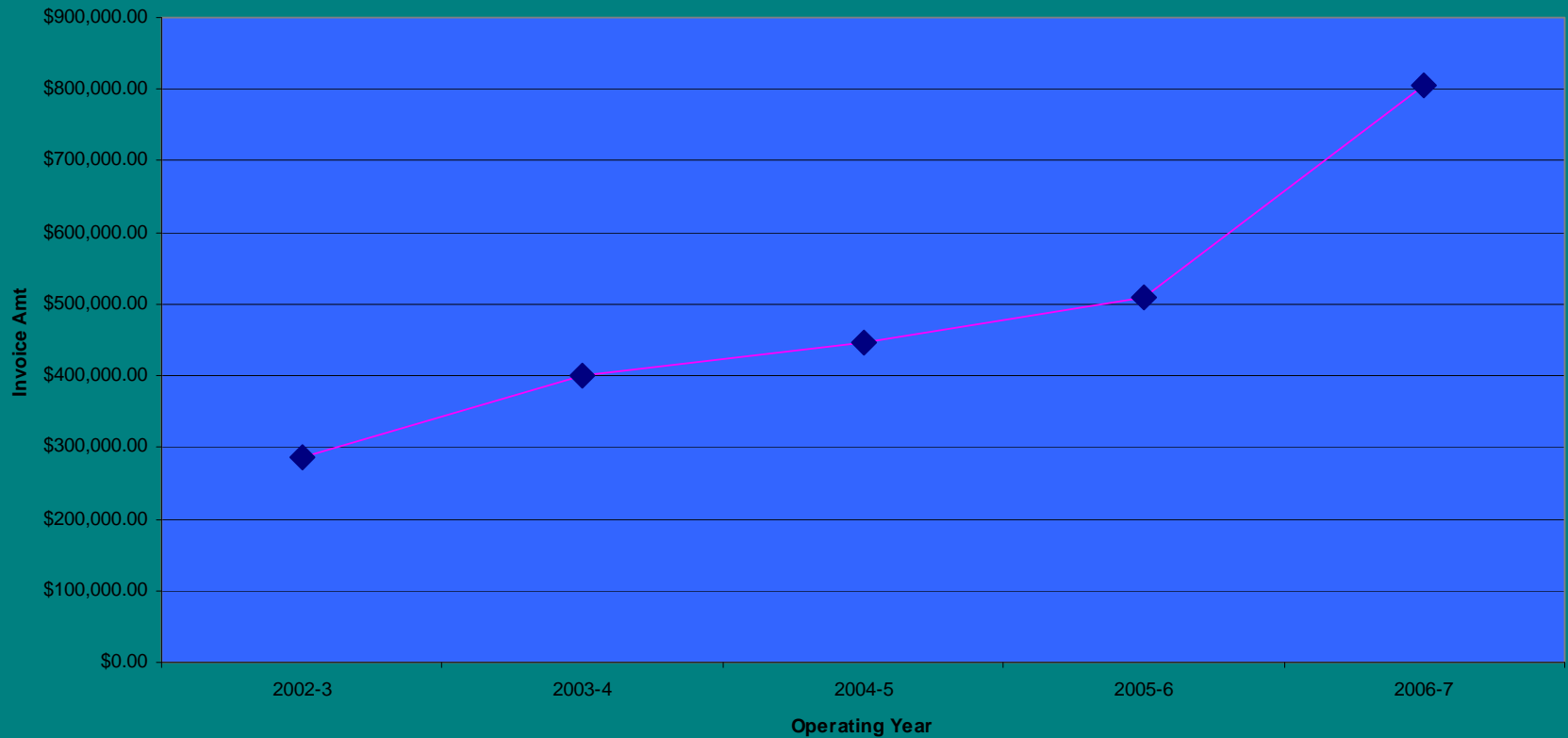
- What forms of alternative energy production make the most economic sense based on current costs of equipment, installation and maintenance? Making various plausible assumptions about future energy cost increases, how will the economic feasibility of such alternatives change over the planning period?
- What would be the estimated capital investment cost of the most feasible conservation and alternative energy production alternatives?
- As among developers, end users and the Tribe, how should the cost of energy conservation and alternative energy production be shared?
- Should conservation measures be based on performance standards or construction prescriptions?

CURRENT ENERGY USAGE

- Casino Electricity consumption
 - Current 571,500 KWh/mo.
 - Projected 4,228,000 KWh/yr (2004) to 7,242,000 KWh/yr (2024)
- Electricity cost-recent trends (next slide)

Augustine Casino Electricity Cost

Electricity Costs



CPI Inflation

Total increase in the consumer price index during this period (8/2002 thru 7/2006) was 12.67%.

Total increase in casino electricity cost during this period was 78.5%.

Of the electricity cost increase, 45 percent was the result of rate increases, nearly 4 times the CPI increase.

FUTURE ENERGY NEEDS

- Street lighting
- Water supply
- Tribal government center
- Community center
- Residences
- Retail development
- Casino
- Surplus capacity

ENERGY COST PROJECTIONS

- Syska Hennessy was directed to assume 3% per annum energy cost inflation during the 20-year study period. Most people would probably consider this to be conservative. In any case, it is subject to great uncertainty.

Alternative Energy Feasibility Study

- Objectives
- Scope of study
- Conclusions

Scope of Study

Compare pro forma feasibility of PV, Solar hot water, wind, geothermal, cogeneration and biomass energy sources for future development of Reservation.

Evaluate payback period of most promising alternative technologies.

Study Findings

- Most promising technologies are cogeneration, solar hot water and PV.
- Cogeneration payback: 4.4 years
- Hot water payback: 5.9 years
- PV payback: 16.2 years (without subsidies) Estimate made at end of 2005. Current estimate would be about 14.3 years.

ENERGY CONSERVATION

- Codes v. incentives
 - Comparative administrative burden/cost (negative economies of scale with very small organization)
 - Anticipated effectiveness
 - Value of freedom for regulated parties to innovate
 - Hybrid approaches (prescription and performance)
 - Cost and availability of products to meet prescriptive standards and training of labor force in prescribed techniques.
- If Code, which model should we follow?
 - International code
 - California code
 - Others

Regulatory issues

- What do we want to regulate: construction, operation, materials?
- How to keep up with innovation
- Sanctions and enforcement
- Exemptions
 - Pre-existing buildings (casino)?
 - Temporary buildings?
 - Emergencies?

Advantages of International Code

- Consistent with International Building Code already adopted by Tribe.
- Similar to UBC, therefore familiar to contractors, architects, engineers and labor force.

Disadvantages of International Code

- Not very aggressive in its standards.
- No solar radiation easements.
- Doesn't address building operations.
- Doesn't address land use planning and infrastructure issues.

Conservation Policy Directions

- Adopt all of the International Codes except land use code
- Adopt LEED certification requirement (silver or better)
- Amend land use code to require attention to energy conservation in site and infrastructure planning
- Develop administrative infrastructure

Implementation Issues

- PV system designers and installers have backlogs-therefore reluctant to participate in competitive bidding.
- California PV subsidies have not been extended to local electricity provider's jurisdiction.

NEXT STEPS

- Review design/development proposals
- Solicit financing proposals
- Confirm project economics
- Schedule construction