Quinault Indian Nation 2014 Comprehensive Biomass Strategy Project Status Report

2014 Department of Energy
Program Review

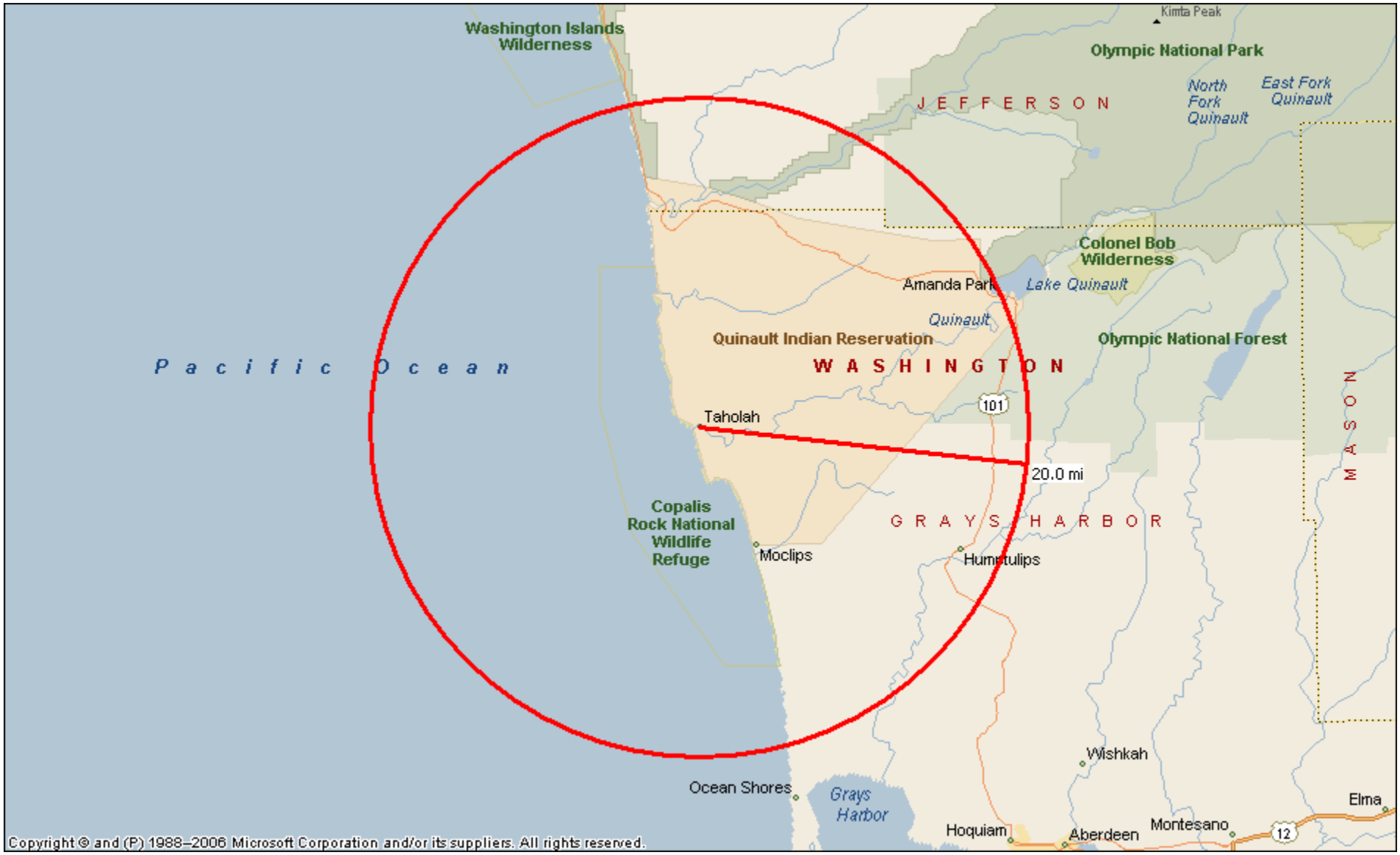
COLPAC
Columbia-Pacific Resource Conservation & Economic Development District

GREATER GRAYS HARBOR INC.
Your regional Chamber of Commerce, Economic Development Council and Visitor Information Center

Project Overview

- Identify and confirm Tribal energy needs
- Comprehensive review of QIN biomass availability*
- Develop a biomass energy vision statement, goals and objectives
- Identify and assess viable biomass energy options, both demand-side that reduce energy consumption, and supply-side that generate heat and/or energy
- Develop a long-term biomass strategy consistent with the long-term goals of QIN

QUINAULT INDIAN NATION


Washington Islands Wilderness
Kimta Peak
Olympic National Park
North Fork Quinault
East Fork Quinault
J E F F E R S O N
Colonel Bob Wilderness
Amanda Park
Lake Quinault
Quinault
Quinault Indian Reservation
Olympic National Forest
P a c i f i c O c e a n
W A S H I N G T O N
101
Taholah
20.0 mi
M A S O N
Copalis Rock National Wildlife Refuge
G R A Y S H A R B O R
Moclips
Humptulips
Wishkah
Ocean Shores
Grays Harbor
Hoquiam
Aberdeen
Montesano
12
Elma
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Our Project Partners

- Columbia-Pacific RC&EDD (ColPac)
- Faith Leadership Consulting
- American Community Enrichment
- Greater Grays Harbor Inc.
- Grays Harbor County
- Richmond Engineering
- USDA Rural Development
- US Forest Service
- Department of Energy

To Identify and Confirm Tribal Energy Needs the Tribal Community Must Be Informed and Involved!

Tribal Community Opinions and Recommendations Matter!

- What are your current energy needs?
- Will renewable energy resources such as biomass fit your needs and what are your concerns about the use of biomass for heat and energy?
- What direction would you like to see QIN moving towards in support of current and future Tribal energy needs?
- What is Biomass?

The BioMass Project

Your Quinault Indian Nation is working with ColPac (Columbia Pacific Resource Conservation and Economic Development District) to develop the cost saving and job creating use of local sustainable BioMass resources to meet the energy needs of the tribe and enhance the local economy.

Just what is BioMass?

BioMass is a renewable energy source that is biological material from living, or recently living organisms such as trees. Here we're mostly talking about using **wood chips as fuel for heat energy**. Since we have an abundance of wood and wood byproducts in our forested area, it provides a practical way for us to reduce our dependence on fossil fuels and save on high heating costs.

We need your support

You can make a difference by supporting the BioMass Project. Talk it over with your family and your neighbors. Stay informed about the progress of the project. Participate in the discussion. **Get involved.**

We want the Quinault Indian Nation to be the best it can be. Together we can continue to make progress. We value your opinions and comments.

Call the tribal offices for more information about this important project..

Quinault Indian Nation

1214 Aalis Drive / P.O. Box 189 / Taholah, Wa. 98587
360-276-8215 Toll free: 1-888-616-8211 Fax: 360-276-4191

ColPac

Columbia-Pacific resource conservation and economic development district

330 Pioneer Ave. W. / Montesano, WA 98563
360-249-2267 Fax: 360-249-6961

BioMass

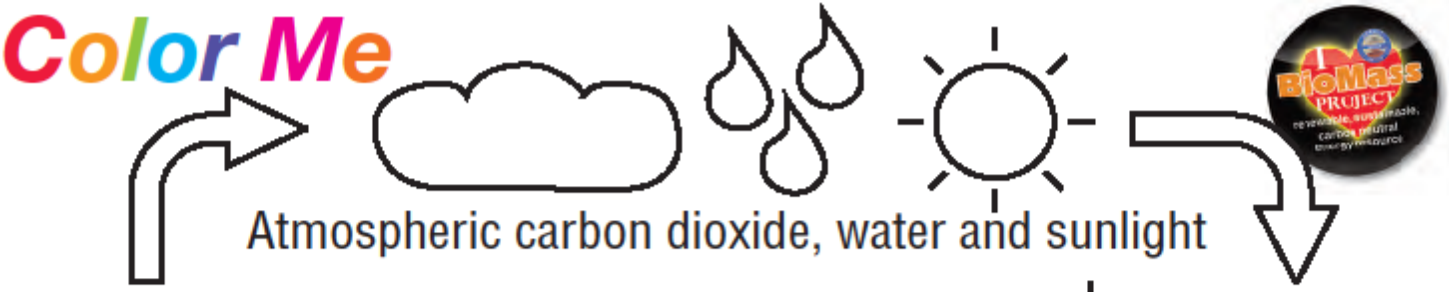
The Renewable Cost Saving Sustainable Job Creating Energy Resource for the Quinault Nation

a joint project of
The Quinault Indian Nation and ColPac

Quinault Indian Nation Biomass Essay & Coloring Contest (Don't Forget the Kids!)

In partnership with USDA, Quinault Indian Nation, Columbia-Pacific RC&EDD, Grays Harbor County, Greater Grays Harbor Inc.

Color Me



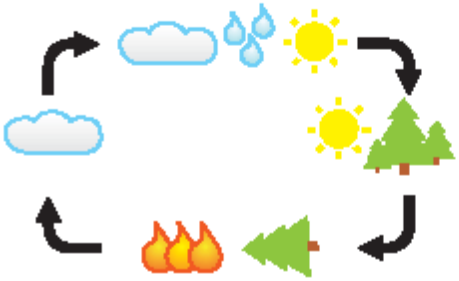
Atmospheric carbon dioxide, water and sunlight

a balanced cycle of carbon give and take

Converted into new plant material through photosynthesis

Which is harvested and burned

Carbon released back into the atmosphere



BioMass *is Better*

A Joint project of the Quinault Indian Nation and ColPac. Call Julie Law at 276-8215 x218 for more information.

GRADE 7-12
BIOMASS ESSAY WRITING CONTEST

Sponsored by the Quinault Indian Nation and ColPac

Writing Contest Topic: How will BioMass help the Quinault Indian Nation and impact my life?

Win $100 and other Cash Prizes!

Details: In recognition of the BioMass project sponsored by the Quinault Indian Nation and ColPac, we wanted to find out how students feel about using our local natural BioMass resources for our energy needs. Ask your teacher or Julie at the QIN Grants & Contracts Office about the details of the BioMass project.

How will using BioMass affect you, your family and your community?

We built our writing contest around this simple question: ***"How will BioMass help our Quinault Indian Nation and impact my life? And in what way?"***

We want to hear how you feel BioMass can make a difference in your life and our community. You can use your own ideas, but here are some suggestions:

- What inspires you to do something positive about energy use?
- Why is it important to use BioMass instead of fossil fuels?
- How will using BioMass impact your life?
- What are the best uses for the money we save using BioMass?
- What is the message about BioMass that everyone should hear?

So tell us. Submit a 500 word (or less) essay about this topic.

Free Contest: This is a free writing contest for grade 7 – 12 students living and attending school within the Quinault Indian Nation. The sponsors, QIN and ColPac, do <u>not</u> require a submission fee and will select the winners at their sole discretion. All selections are final.

Contest Deadline: May 30, 2012 at Midnight Pacific Standard Time (US)

Prize Package and Winner: The Grand Prize winner, Second Prize and Third Prize winners will be selected, along with several finalists by QIN and ColPac. **The Grand Prize winner will receive $100.00, the Second Prize is $50.00 and the Third Prize is $25.00.** All winners and finalists will receive a certificate and have their essays publicly posted. Winners and semi-finalists will be announced here after June 10th, 2012. Winners and semi-finalists will be contacted promptly.

Easy Entry Instructions:

ONE ESSAY ENTRY PER PERSON!

Write a 500 word (or less) essay typed or <u>legibly</u> hand written on blank or college ruled white paper. Put your name, age, grade, phone and address at the top of the first page. Hand it in to Julie Law at the QIN Grants and Contracts office by the deadline. GOOD LUCK!

Last Words:

Our hope is that your essay and thoughts will positively impact others and help with our mission of making the Quinault Indian Nation a better place. Help spread the word. Feel free to share this contest with your Language Arts/English teacher and your friends. You could win $100.00 or other cash prizes and your story and your experience may inspire others.

Quinault Indian Nation 1214 Aalis Drive / PO Box 189 / Taholah, WA 98587 / 360-276-8215
ColPac 330 Pioneer Ave W / Montesano, WA 98563 / 360-249-2267

Our Project Focused on Tribal Community's Input for Direction

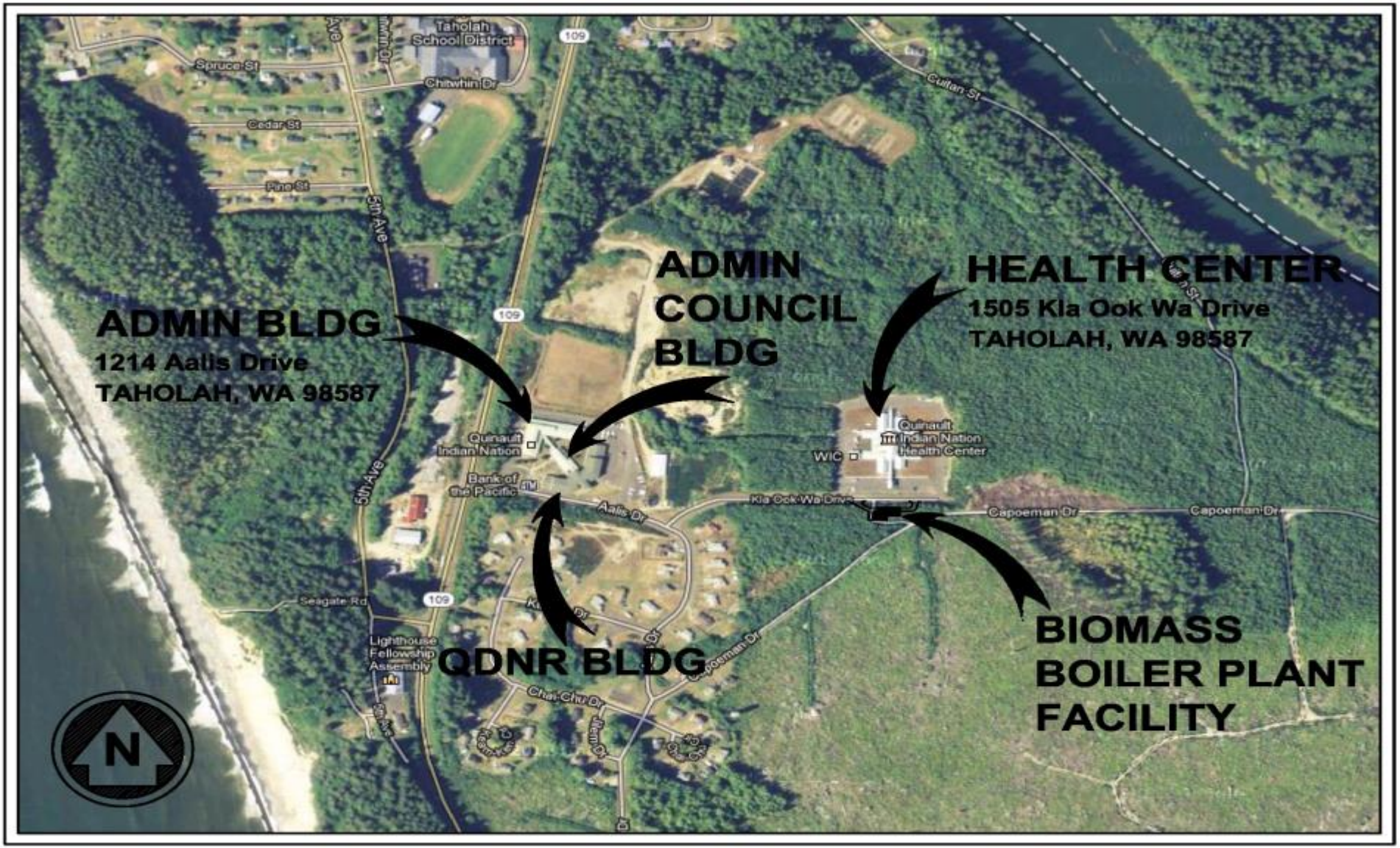
- Tribal Community wanted to be involved in QIN's current and future energy solutions development
- There is an ongoing need to use QIN's vast volumes of Biomass as a sustainable energy resource
- **Wood heat costs less than electric heat***
- Effective Weatherization Programs need to be pursued
- Biomass based Tribal Enterprises need to be developed
- Small scale combined heat & power solutions need to be considered
- Do not harm the environment – QIN Keepers of the Land

Potential Cost Savings between Electric and Wood Heat

- QIN Admin Complex: Annual Electric Cost = **$59,237**
- Health Center: Annual Electric Cost = **$67,183**
- Annual Total = **$126,420**
- QIN Admin Complex and Health Clinic Annual **Wood** Heating Cost = **$51,000***
- **Potential annual savings from wood heat = $75,420**

* Wood fuel cost estimated at $120/BDT in pellet form purchased from an off-Reservation Vendor (425/BDT per year x $120/BDT)


HEALTH CENTRE


ADMIN BLDG
1214 Aalis Drive
TAHOLAH, WA 98587
ADMIN COUNCIL BLDG
HEALTH CENTER
1505 Kla Ook Wa Drive
TAHOLAH, WA 98587
QDNR BLDG
BIOMASS BOILER PLANT FACILITY
Taholah School District
Spruce St
Cedar St
Pine St
5th Ave
Chitwhin Dr
Cultan St
109
Quinault Indian Nation
Bank of the Pacific
WIC
Quinault Indian Nation Health Center
Aalis Dr
Kla Ook Wa Drive
Capoeman Dr
Seagate Rd
Lighthouse Fellowship Assembly
Cha-Chu Dr
N

Methods for Developing a Biomass Energy Vision Statement, Goals, Objectives

- Strategy Sessions with:
  - Key QIN Tribal Community Stakeholders
  - QIN Sub-Committees
  - QIN Business Committee
- In Support of:
  - Determining QIN's current and future energy needs
  - Identifying a clear direction to fulfill energy needs
  - Set realistic goals
  - Set applicable objectives to attain goals

Developing a Long-Term Biomass/Energy Strategy

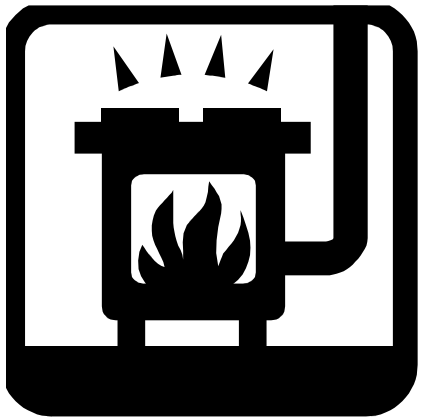
- Things to keep in mind along the way:
  - Focus on the resource(s) that are readily available
  - Costs vs. Benefits
  - Is the proposed strategy consistent with the long-term goals of the Quinault Indian Nation
  - Your ongoing commitment to being “Keepers of your lands”

Potential Impacts to QIN

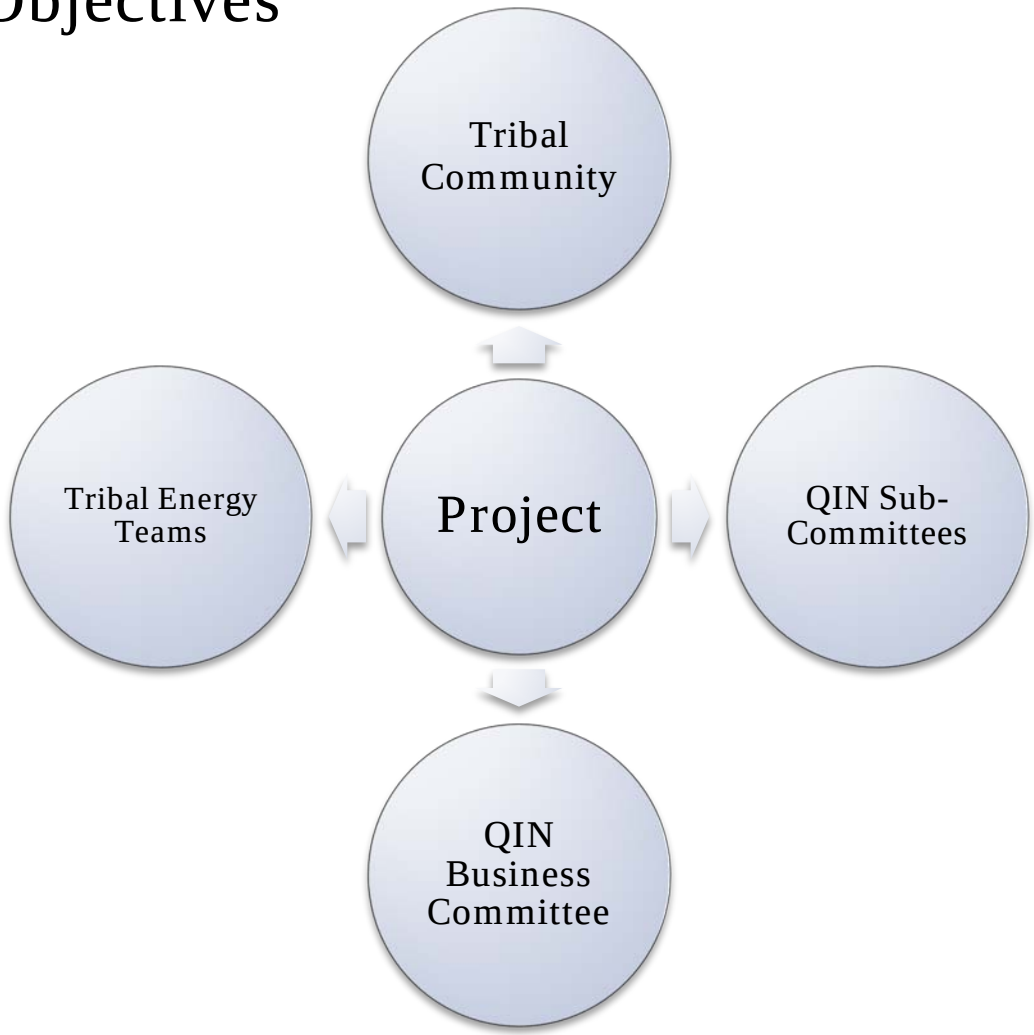
- Tribal employment opportunities as energy programs develop and are implemented
- Tribal entrepreneurial opportunities in support of biomass hauling or harvesting , heavy equipment operators and related businesses
- Managed wood waste removal will rely less on slash pile burning resulting in less pollutants into the atmosphere
- Educational opportunities for QIN's children and community resulting in stronger interest in the field of Renewable Energy

QIN Renewable Energy Project Getting from A to Z and Developing a Strategy Along the Way

- QIN Renewable Energy Resource Identification and Assessment
- QIN Comprehensive Biomass Strategic Planning Project
- QIN Biomass Availability Inventory
- QIN Biomass for Heat Facility Engineering and Design
- QIN Pellet Manufacturing Feasibility Study



QIN Project Dependencies and Resources Path to Realizing Objectives



Doing things alone doesn’t always turnout as planned!

Nothing wrong with asking for help!

US Department of Energy

- Renewable Energy Feasibility Study Program
- First Steps Toward Developing Renewable Energy & Energy Efficiency on Tribal Lands, Strategic Energy Planning

QIN's Renewable Energy Resource Identification and Assessment and Comprehensive Biomass Strategic Planning Project were funded through these Department of Energy Programs

USDA United States Department of Agriculture
Rural Development

- USDA Rural Business Opportunity Grant (RBOG)
- The primary objective of the RBOG program is to promote sustainable economic development in rural communities with exceptional needs.
- QIN's Biomass Availability Inventory and Pellet Manufacturing Feasibility Study were funded through this USDA Program
- QIN's Biomass Availability Inventory was also selected as 1 of 7 National USDA Great Regions Projects by Secretary of Agriculture Tom Vilsack

US Forest Service Woody Biomass Utilization Grant Program

Woody Biomass Utilization Restoration Activities on All Priority Forestlands Goals of the grant program are:

- Assist projects that produce **renewable energy from woody biomass while protecting the public interest**.

QIN's Biomass for Heat Facility Engineering & Design was funded through this USFS Program

Engineering and Design Overview

Engineering & design of the QIN Biomass for Heat Facility has been accomplished by Richmond Engineering and includes the following tasks:

- Abbreviated Master Plant Site Selection
- Schematic Design
- Design Development
- Final Design/Bid Preparation

RICHMOND SYSTEMS, INC.

Engineering & Design Progress 2012 through 2014

- Selected BLRB Architects to assist with building design and layout
- Researched Biomass Combustion Systems
- Researched insulated piping options
- Researched QIN Project site including existing buildings and proposed buildings to be serviced by heating facility
- Provided QIN with preliminary site recommendations
- Researched as-built drawings of existing structures to be integrated with biomass heating facility
- Researched available utilities, water, sewer, storm, and power

RICHMOND SYSTEMS, INC.

Engineering & Design Progress 2012 through 2014 (Continued)

- Incorporated as-built drawings and QIN topographic information into preliminary site plan
- Reviewed heating systems of existing buildings and created action plan to incorporate biomass heating facility as primary heat source
- Estimated total biomass boiler heating demand for existing and proposed buildings
- Created preliminary conceptual drawings for review and feedback
- Researched biomass boiler options and sizes
- Researched fuel supplies and sources to run biomass facility

RICHMOND SYSTEMS, INC.

Engineering & Design Progress 2012 through 2014 (Continued)

- Prepared architectural and civil exhibits for QIN project meetings
- Researched pellet manufacturer options
- Revised preliminary site layout based on smaller building footprint required for a pellet boiler facility
- Selected and sized preliminary pellet boiler system and designed equipment layout for facility
- Researched pellet mills and potential supply options
- Incorporated the basis-of-design pellet boiler into preliminary construction drawings

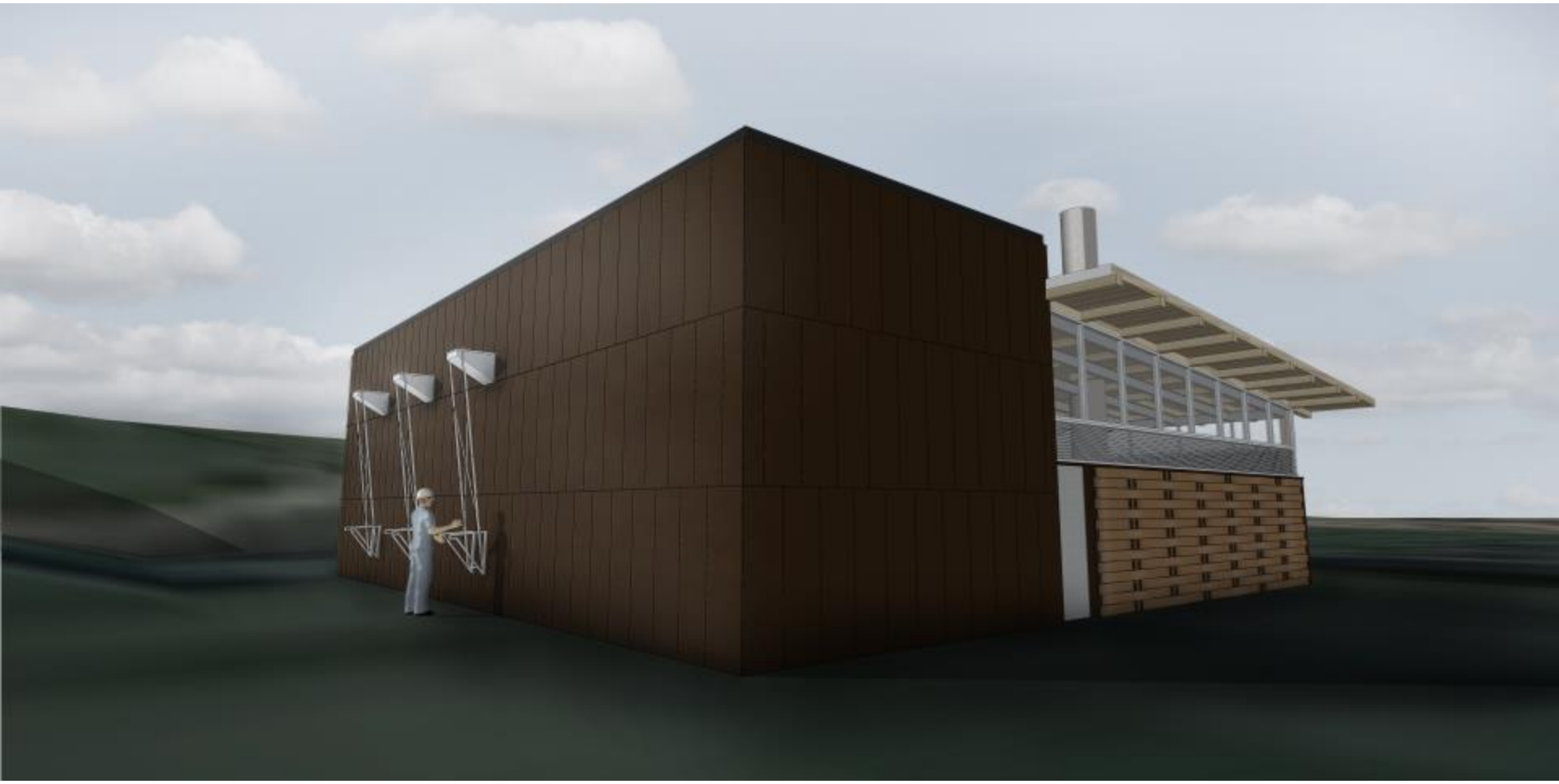
RICHMOND SYSTEMS, INC.

Engineering & Design Progress 2012 through 2014 (Continued)

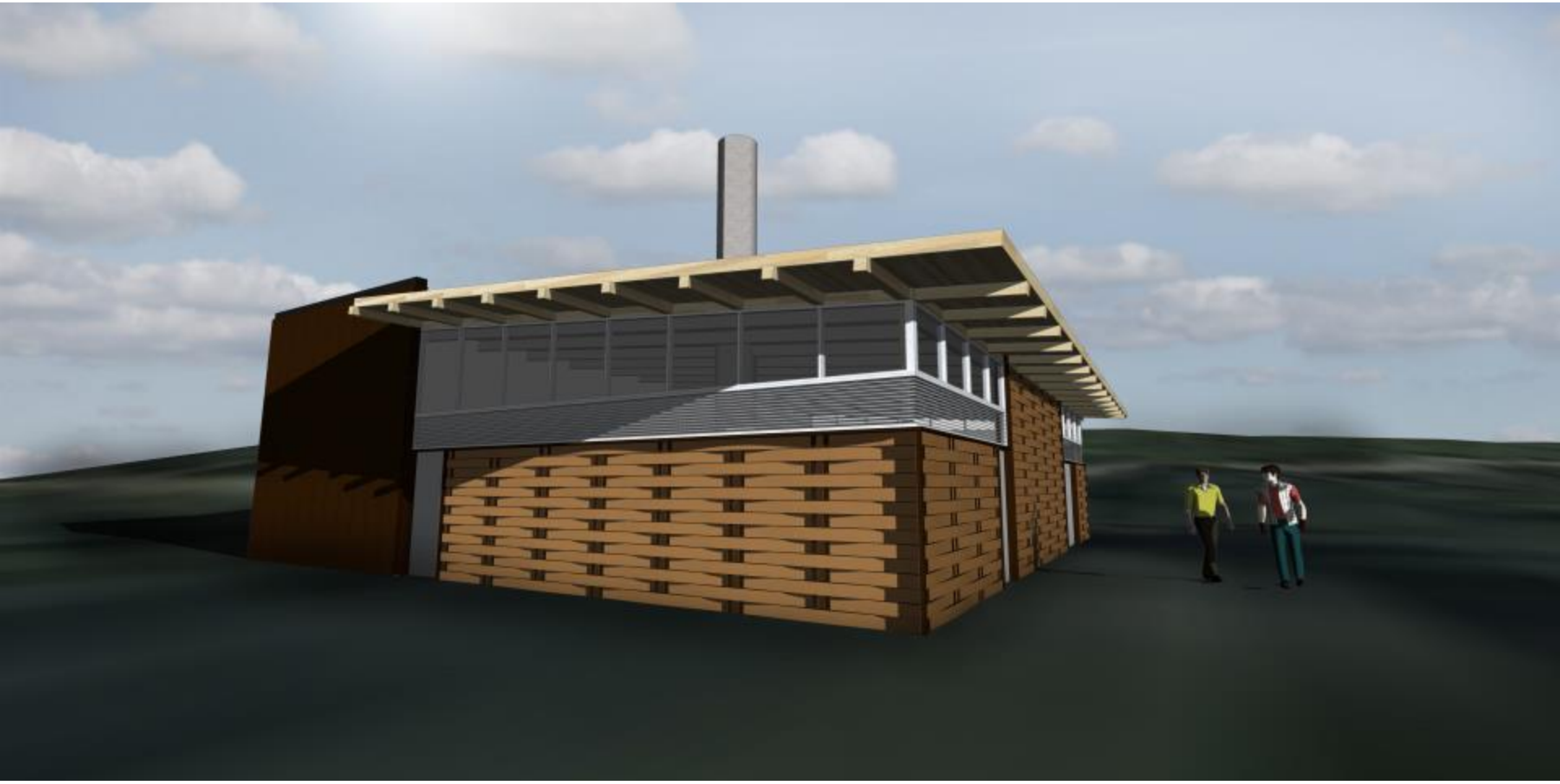
- Transferred draft-work of existing building layouts into construction plans and determined routes for heat transfer piping
- Researched pellet boiler manufacturer options and selected Viessmann-Kob's Pyrot to be the basis-of-design based on the emissions, ease of use, and efficiency of this product
- Coordinated tours to Olympus Pellet Mill in Shelton, WA and Biomass Facility in Forks, WA
- Developed cost estimates to include pellet productions
- Completed site survey & provided 100% Construction Documents

RICHMOND SYSTEMS, INC.

QIN Biomass Heating Facility Conceptual Drawings



QIN Biomass Heating Facility Conceptual Drawings



QIN Biomass Heating Facility Conceptual Drawings

Quinault Indian Nation Pellet Manufacturing Feasibility Study Scope of Work

- Assessment of currently available bio-fuel feedstock from QIN forest management practices in support of estimating load amounts
- Assessment of the availability of potential high grade bio-fuel feedstock such as Nile Fiber in support of determining biomass pellet mixture components
- Development of operational processes and economic viability in support of factors associated with biomass for bio-fuel harvesting, sorting, transporting, processing and applicable storage requirements
- Comprehensive survey of potential fuel pellet market in support of confirming economic viability

RICHMOND SYSTEMS, INC.

Quinault Indian Nation Pellet Manufacturing Feasibility Study Scope of Work

- Tribal Community and neighboring Communities outreach in support of project information exchange
- Development of applicable Business Model and assessment of pro forma financials in support of determining suitable pellet manufacturing output volumes

RICHMOND SYSTEMS, INC.

Innovative Biomass Solutions from Non-Invasive Nile Fiber

- **Fuels:** With yields as much as 5 times more fiber per acre than corn, Nile Fiber is a strong alternative fuel. It reduces feedstock costs and provides economic benefits as a non-food source.
- **Energy:** Nile Fiber™ can be burned with coal at 8000 BTU's or it can be converted into E-Coal, which is a complete coal replacement.
- **Pellets:** Can supply a dedicated and sustainable renewable supply of pellets away from commodity pricing.

TREEFREE
BIOMASS SOLUTIONS INC.

Nile Fiber™ Industries

- **Pulp and Paper:** Nile Fiber™ can currently replace the use of trees in the manufacturing of over 2000 paper grades and countless consumer products. In the future, with further research, it will be able to replace many more coated grades of paper.
- **Composite Boards:** Nile Fiber™ can replace the use of trees in the manufacturing of composite panels such as oriental strain board “OSB” and medium density fiber board, “MDF”.
- **Forage:** Nile Fiber™ provides healthy forage for animals. We are currently commercializing Nile Fiber™as a feedstock.
- **Phytoremediation and Land clean-up:** Nile Fiber™ carbon sequesters and phytoremediates 15 times faster per acre per year than trees because of its mass per acre and its growth rate of 3” per day during growing season.

TREEFREE
BIOMASS SOLUTIONS INC.

Satsop Business Park - Leasable Land

QIN Pellet Manufacturing Feasibility Study Project Task Timeline

- Assessment of Bio-fuel available: 02/1/14-04/1/14
- Assessment of Biomass Components: 02/1/14-08/1/14
- Development of Operational Processes and Storage Requirements: 02/1/14-06/1/14
- Analysis of Pellet Market: 04/1/14-07/1/14
- Project Community Outreach: 02/1/14-08/1/14
- Develop Business Model: 07/1/14-08/1/14
- Progress Reports: Midpoint 05/1/14 & Final 09/22/14

QIN's Renewable Energy Strategic Plan will continue to be driven by the abundance of woody biomass available within our Reservation and Bio-crop potential

- To achieve sustainable energy self-sufficiency
- To better manage, sustain, and protect our natural resources
- To generate new employment and new tribal enterprise opportunities for the Quinault Indian Nation and our members
- To create an energy system consistent with environmental sustainability and the cultural values of the Quinault Nation
- For the benefit of current and future generations

Quinault Indian Nation Comprehensive Biomass Strategy Project