

**RESOLUTION NO. 1525  
CITY OF PRINEVILLE, OREGON**

**A RESOLUTION APPROVING A PERSONAL SERVICES AGREEMENT WITH  
THE BECK GROUP AND HIGHLAND ECONOMICS TO PROVIDE PERSONAL SERVICES FOR AN  
ENVIRONMENTAL AND ECONOMIC ANALYSIS FOR PRINEVILLE RENEWABLE ENERGY  
PROJECT**

**Whereas**, the City of Prineville (“City”) requires an environmental and economic analysis for the Prineville Renewable Energy Project (“PREP”).

**Whereas**, City requires professional consulting services to complete the aforementioned services.

**Whereas**, City’s Council serves as the Local Contract Review Board for the City and pursuant to City Resolution 1266 Section 8(C), may award personal services contracts according to specific criteria that are applicable to the services provided.

**Whereas**, Consulting services are considered personal services pursuant to City Resolution 1266.

**Whereas**, The BECK Group and Highland Economics have provided the attached material marked as Exhibit A and incorporated herein.

**Whereas**, City Counsel finds that the BECK Group and Highland Economics meets the following applicable criteria as set out in City Resolution 1266, Section 8(C): (1) total costs to the City for delivery of services; (2) expertise of the contractor in the required area of specialty; (3) references regarding prior work done by the Contractor; (4) capacity and capability to perform the work, including any specialized services within the time limitations for the work; (5) educational and professional records; (6) availability to perform the assignment and familiarity with the area in which the specific work is located; (7) timeliness of delivery of service; (8) experience in working with the City; and (9) knowledge of City’s needs and desires related to the contract, all of which are more particularly set forth on the attached Exhibit B, which is incorporated herein.


**Now, Therefore, the City of Prineville Resolves as follows:**

1. That the City Council, serving in its role as the Local Contract Review Board for the City, hereby approves the City entering into a personal services contract with the BECK Group and Highland Economics to provide an environmental and economic analysis related to the Prineville Renewable Energy Project and authorizes the City Manager to execute, on behalf of the City, such contract and any other related documents.

Approved by the City Council this 25<sup>th</sup> day of May, 2022.

  
\_\_\_\_\_  
Rodney J. Beebe, Mayor

ATTEST:

  
\_\_\_\_\_  
Lisa Morgan, City Recorder



*Forest Products Planning & Consulting Services*

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May 9, 2022

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**RE: Prineville Renewable Energy Project (PREP) Phase I Proposal**

Caroline and Eric,

Attached is our proposal for assisting the City of Prineville's biomass renewable energy project (PREP).

Included is a description of our understanding of the project, our general approach to the work, a detailed scope of work, project schedule, deliverables, cost, and a listing of our team, qualifications, and experience. Note the project is organized into three phases.

Thank you for the opportunity to provide a proposal.

Sincerely,

Roy Anderson  
Vice President

## BACKGROUND

The Beck Group (BECK) and Highland Economics (HE) are pleased to provide the City of Prineville with this proposal for an Environmental and Economic Impact Study related to the Prineville Renewable Energy Project (PREP). PREP is a biomass power project aimed at simultaneously addressing forest health needs, reducing wildfire risk, revitalizing the local forest products sector, and generating renewable, baseload power to address power transmission constraints within the region.

## TEAM QUALIFICATIONS

### THE BECK GROUP

Founded in 1981, BECK is a leading, forest products planning and consulting firm based in Portland, Oregon. BECK offers a range of services to private, public, tribal, and non-profit clients in North America and around the world. Our goal is to provide practical and cost-effective solutions that improve our client's ability to plan and execute the actions that lead to better performance and accomplishing objectives. BECK's experienced staff provides clients with the innovative solutions needed to meet the challenges of today's highly competitive environment. The firm is well known in the forestry and forest products industry in the areas of biomass heat and power, project planning, management training, feasibility studies, mill modernizations, competitive assessments, due diligence, fiber supply, and timber procurement planning.



Complementing the Beck Group's deep experience and knowledge of the forest products industry, Highland Economics' team of four economists brings depth and breadth of experience in identifying and communicating effectively the social and economic impacts of natural resource management and development. We specialize in economic analysis of forests, water, recreation, energy, carbon, air, and habitat resources. We routinely conduct ecosystem service analyses and economic impact analyses that holistically portray how natural resource projects affect community well-being and socioeconomic values. In this work, often conducted for local, state, or federal agencies, we estimate how changes in natural resource management directly and indirectly affect local jobs, income, and quality of life for local residents (through ecosystem service impacts). We are adept at gathering information on local economic conditions and industry norms to customize economic impact models to ensure that ensure the model (and therefore the results) are a good representation of actual economic conditions and likely policy outcomes. Recent projects include analyzing economic development effects of biomass projects, including the economic benefits of associated forest restoration activity; quantifying how Marbled Murrelet critical habitat designations in Washington affected county economies and ecosystem services; quantifying ecosystem service benefits of forest restoration in Sonoma County, California; estimating how increased forest restoration in the Southwest 4FRI forest restoration initiative would affect timber industry businesses and local economic development; and quantifying how forest restoration in Southern California would increase water quantity and water quality, thereby resulting in economic value and cost savings to local water providers.

**Table 1** on the following page summarizes relevant project experience for The Beck Group and Highland Economics. As illustrated in the table our firms have worked together in the past to successfully complete projects. We also have worked on projects where the scope of work was similar or identical to the scope of work for the PREP. In summary, we are well qualified to complete the work and we have experience working together for groups/clients that are similar to the City of Prineville. Additionally, bios and more detailed descriptions of past projects are included in the **Appendix**.

**Table 1: The Beck Group and Highland Economics Example Relevant Project Experience**

Prior Relevant Project	The Beck Group	Highland Economics	Biomass Feasibility	Sawmill Feasibility	Environmental Benefits of Restoration	Economic Impact Analysis	Ecosystem Impact Analysis	Ecosystem Service Analysis	Economic Development	Carbon/Energy	Air Quality	Water Quantity /Water Quality
Klamath Tribes Forest Restoration, Sawmill, Biomass Plant, Oregon	X	X	X	X			X		X		X	X
NorthWestern Energy Developing a Business Case for Sustainable Biomass Generation: A Regional Model for Western Montana	X	X	X	X	X		X		X			X
Southern Oregon University Biomass Plant, Ashland, Oregon	X		X							X	X	X
Lincoln County Nevada & A-Power Energy Systems Biomass Heat & Power Feasibility Study	X		X		X				X		X	X
Economic Impact Analysis and Economic Development Potential of Expanding Timber Harvest under the 4FRI Forest Restoration Initiative		X			X	X	X		X			X
Ecosystem Service Value of Forest Restoration and Conservation, Sonoma County California		X			X	X		X	X	X	X	X
Economic Value of Water Benefits from Forest Restoration in the Santa Ana Watershed, California		X		X	X	X		X				X
Economic Impact and Ecosystem Service Analysis of Reduced Timber Harvest from Marbled Murrelet Conservation		X					X	X	X	X	X	X
Economic Impact of Renewable Energy (10+ Projects throughout Western United States)		X					X	X	X	X	X	X

## **OUR GENERAL APPROACH TO COMPLETING THE WORK**

Objective: The purpose of this study will be to bring together in one framework a holistic presentation of the social, economic, and environmental benefits and potential costs of the PREP. The socioeconomic analysis will present the economic value of the environmental impacts described above, as well as estimate the social and economic impacts of the PREP in terms of jobs and income generated, enhanced local quality of life, and enhanced community economic resiliency (through diversification of the economy, potential additional economic development opportunities enabled, and increased local baseload power generation).

Partnership Approach: BECK will be the prime consultant, partnering with HE to complete the work. BECK will lead the analysis on quantifying the environmental effects of the facilities and the forest restoration, while HE will estimate in social and economic terms the value of environmental effects (through ecosystem service valuation methods). HE will also estimate the economic development effects, including those related to jobs, income, quality of life, and community resiliency. Working together, BECK and HE can address the entire scope of work. BECK and HE worked together using this same arrangement in the past on a biomass heat and power feasibility study for The Klamath Tribe in Southern Oregon as well as a for a biomass plant in Montana. The responsibilities and expertise of each partner are described throughout the proposal.

Phased Work Schedule: To meet the aggressive timeline for completing a broad ranging scope of work, we have organized our work into three phases.

Compensation: We propose working with a flat fee structure with the amount and timing of our compensation tied to our team completing various phases and milestones. The specifics are described in the cost section of our proposal.

Reliance on Prior PREP Planning and Analysis: Our proposal addresses all items included in the RFP as the PREP was conceptualized by TRM Energy Solutions in their Engineering and Design Study and the accompanying Biomass Fuel Supply Study completed by TSS Consultants. However, as further described in the Scope of Work, there are several alternate scenarios for certain design and operational considerations that our team will consider in the environmental and economic analysis that differ from TRM Energy's conceptualization and from the scope of work in the RFP.

Deliverables: BECK and HE will design the deliverables in a way that concisely relays key findings and conclusions in simple, easy to understand terminology. Readers that want more detailed information about methodologies and discussion of complex issues will be able to find that information in report appendices.

## **SCOPE OF WORK**

The diagram on the next page below summarizes our approach to all work phases, with detail provided in the following sections. Phase 1 addresses Step 1 in the diagram and several other related issues. Phase 2 addresses Step 3 in the diagram. Phase 3 addresses Steps 4 and Step 5 in the diagram.

# Quantifying Economic & Environmental Impacts of PREP



## Step 1: Baseline Conditions

**What forest restoration and energy production would occur without PREP?**

This step sets up the analysis for identifying the *changes* in environmental, social, and economic outcomes for Prineville and Crook County from PREP vs. alternative sources of energy.

## Step 2: Forest Health & Fire Risk

**How would forest restoration change wildfire severity and probability?**

As so much of the environmental and economic value of PREP is tied to the restoration, this step is critical in determining how PREP-associated restoration would reduce forest fire and improve forest health.



## Step 3: Environmental Impact

**How would forest restoration and PREP affect forest health and local environmental conditions?**

This step will quantify the change in air emissions, water supply available for human use and instream flows, water quality (such as reduced sedimentation), habitat, the amount of carbon stored and emitted, etc.

## Step 4: Economic Value of Environmental Impact

**How do environmental effects translate into economic and social benefits?**

This step converts environmental impacts into valuation of what people care about, including the costs of fire damage and wildfire fighting, water supply costs, recreation opportunities and benefits, property values, reduced health care costs, and improved aesthetics.



## Step 5: Jobs, Income, & Community Resiliency

**How would restoration, baseload power, and new industry affect our economy?**

This step quantifies the direct and indirect jobs and income benefits of PREP. It will highlight the multi-faceted economic development benefits of PREP related to addressing key economic, environmental, energy, and social vulnerabilities that may limit long-term economic development and community resiliency in Prineville.



## Phase 1 - Foundational Tasks

### 1. Kick-Off Meeting & Other Project Meetings (\$2,000)

BECK and HE will organize a virtual kick-off meeting. The objectives of the meeting will be to acquaint our team with project stakeholders, review the study work plan and schedule, and identify key contacts and sources of information that will be helpful for the study. The kick-off meeting will address both the environmental impact study and the economic impact study.

### 2. Define A Basis of Comparison (i.e., Without PREP) (\$17,000)

In this foundational task, we will identify the social, economic, and environmental conditions that would exist *without* the PREP's presence. Key to this task is identifying the alternative sources of electricity and the level of forest restoration and wildfire risk that would occur without PREP, as well as the social and economic vulnerabilities in the local economy related to energy transmission, energy generation, and wildfire. This will form the basis of comparison to estimate the benefits of the PREP.

The information generated in this task will form the project's framework as described below.

1. Identify and describe the source of baseload electrical power that will be consumed in Prineville in the future. This is expected to be whatever technology the utility currently providing power to Prineville considers when calculating its avoided cost. In most cases this is power produced by a natural gas fired power plant, but this will be confirmed (or disproven) as part of the study. We will also identify the likely alternative renewable sources of energy (wind, solar, etc.) that could be developed if PREP were not developed.
2. From an environmental impact standpoint, the current source of power for Prineville and the level of forest restoration and the associated level of wildfire risk that would occur without PREP (and its associated environmental conditions) will serve as the basis of comparison to estimate the impact of PREP, including susceptibility to wildfire, water quantity and quality conditions, carbon emissions, air quality conditions, landfill usage, etc. Key to this task will be to fully identify and describe the level, type, and timing of forest restoration that would occur without the biomass facility, as well as the destination or use of forest materials resulting from this level of restoration. The task will also identify and quantify to the extent possible the risk of wildfire without restoration in terms of likelihood and magnitude of fire without the proposed Project, as well as the future state of the forest over time without the Project (i.e., we will investigate trends and not assume current forest conditions would be future conditions without the Project).
3. From a social and economic standpoint, we'll identify the vulnerabilities in local economic diversity, economic development, quality of life, and community resiliency without the PREP. In addition to considering the long-term threat of wildfire, this will include identifying the economic consequences of the limited transmission and baseload power generation in the region, and what alternatives the region has available, the cost of power with from PREP versus alternate sources, the jobs and income generated from PREP and the associated sawmill and forest restoration activities, and the effects of wildfire risk on social values, costs to Crook County and Prineville, and local economic development.

4. Carbon Capture Technology Analysis (\$5,000)

BECK will provide a high-level assessment of the current state of carbon capture technology. This will include describing the technology to the extent possible (e.g., typical project scale, amount of carbon contained per ton of biomass combusted, capital costs, operating costs, site requirements, etc.); identifying projects (if any) that have used the technology at a lab, pilot, or commercial scale; identifying typical carbon containment project development pathways.

5. Review Meetings (\$1,000)

We will hold a Phase 1 review meeting with City of Prineville staff and other project stakeholders. We anticipate a minimum of three review meetings, one for each of the three deliverables. Other review/progress meetings will be scheduled with the project stakeholders as appropriate/needed. Throughout the course of the study, we propose to have regularly scheduled meetings (such as biweekly) with the City to discuss project progress and our approach to any challenges that may arise.

**Phase 2 –Environmental Impact**

Phase 2 of the work will consist of three main tasks with all to be completed only upon approval to proceed granted by the City of Prineville. Each of the Phase 2 tasks are described as follows.

**Task 1 of Phase 2: Environmental Impact Study (\$70,000)**

As previously described, BECK will have lead responsibility for completing the environmental impact study. **Table 2** illustrates the various environmental factors (far left column) that will be considered. The approach will be to estimate and compare various environmental conditions With PREP and Without PREP. The difference in environmental conditions (positive and negative) is the environmental impact.

**Table 2 – Illustration of Environment Impact Study Framework  
 Compare Environmental Conditions with/without PREP**

Environmental Attribute	With PREP Conditions	Without PREP Conditions	Net Positive/Negative Impact of PREP
Forest Health			
Wildfire Susceptibility			
Water Quantity			
Air Quality			
Landfill Usage			
Carbon Emissions			
Other (still TBD)			
<b>Total Impact</b>			



BECK will identify and quantify the estimated environmental health impacts of PREP (comparing the PREP scenario to the Without PREP scenario) for each of the following environmental impact considerations. Regarding the methodology for completing the environmental assessments, data from various university and U.S. Energy Administration research papers will be used to quantify the environmental impacts. Also note, that for some of the environment impacts, BECK will use a concept called “alternate fate” to analyze what would happen to the PREP facility’s fuels if the facility did not exist.

1. Forest Health

BECK will document current and expected forest conditions using factors such as estimates of trees/acre, total standing biomass, species mix, etc. Regarding species mix, special attention will be given to treating lands with Juniper encroachment and the associated impacts on forest/range health and water supply. Changes in habitat conditions (quality and quantity) for recreationally important species or for threatened and endangered species will also be identified. These forest health conditions will be compared against the expected conditions without PREP-associated forest restoration.

2. Wildfire Risk/Avoidance

Related to the previous bullet one alternate fate is in-forest accumulation of down/dead material and/or over-growth leading to high density wildfire-prone forests. All forests typically experience periodic fires. However, a combination of fire suppression efforts and accumulation of fuels have caused many recent fires to burn with much greater intensity than historical fires. BECK will estimate the likelihood, size, extent, and severity of a wildfire within a 75 mile radius of the PREP site where the bulk of the fuel supply is expected to be sourced.

3. Water Quantity

There is a variety of literature demonstrating that when forests are thinned there is a corresponding rise in water supply in both nearby surface waters as well as in nearby underground aquifers. Specific to the Prineville Region, it is our understanding that there has been research completed show the effect of thinning on water volume in a key nearby watershed. BECK anticipates using that data (or similar data) to estimate the amount of additional water that would be available based on the number of acres thinned/treated per year to supply the PREP plant. Water quantity will also consider water needs at the PREP plant and associated sawmill.

4. Air quality

BECK will document and quantify the air quality effects (such as carbon monoxide, carbon dioxide, methane, particulate matter (PM<sub>2.5</sub>), and volatile organic compounds) associated with the avoidance of open burning of logging slash piles, as well as the avoidance of air emissions from forest fires, considering the reduced likelihood of fire due to forest restoration. The analysis will also estimate the expected emissions of the PREP facility that affect air quality.

5. Landfill Usage

BECK will analyze how landfill usage, and associated environmental impacts such as greenhouse gasses released, would be affected by PREP.

6. Carbon Impact of the PREP

As currently conceived, the PREP facility will generate about 209,000 MWH per year of power. The carbon emitted from that process (e.g., carbon emissions associated with the processing and transport of biomass fuel) will be compared to carbon emissions for the same number of MWHs

of power from the most likely alternative source of power (e.g., as previously described, a natural gas fired power plant). The carbon analysis will also consider carbon emissions from burning of logging slash piles and forest fires avoided, as well as carbon stored in lumber from an associated sawmill.

7. Other

There may be other environmental impacts to include based on input from project stakeholders.

8. Identifying the Most Probable Biomass Fuel Supply Scenario

The PREP biomass plant will consume about 191,000 bone dry tons of woody biomass fuel annually. There are a variety of biomass fuels available to the PREP (e.g., forest thinning, logging residues, mill residues, urban wood waste, ag/orchard waste, etc.). With PREP environmental impact analysis, BECK will define a *Most Probable Fuel Supply Scenario*. This is because the extent of environmental impacts will vary with differing fuel supply “recipes”. Therefore, BECK, in consultation with TRM and other project stakeholders, will identify the most probable fuel supply scenario. BECK will then analyze the environmental impacts of the most likely fuel supply scenario.

9. Special Considerations

BECK will analyze the environmental impacts associated with two special conditions that may arise as the planning and development process for PREP evolve.

- *Sawmill Scenario* – The financial performance of a power plant is enhanced considerably if it is co-located with a sawmill. A sawmill can provide a 24/7/365 thermal load for lumber drying. In other words, steam extracted from the power plant can be sold to the sawmill for thermal energy used in lumber drying, which typically occurs all day every day. Additionally, the by-products of sawmilling (e.g., sawdust, bark, and to a lesser extent planer shavings and wood chips) can be used as fuel for the power plant. Often the bark and sawdust have limited inherent market value for other uses. Therefore, they can serve as a low cost source of fuel for the nearby power plant since they have low market value and there is very little cost in moving the material from the sawmill to the power plant. Finally, the presence of a sawmill affects the types and amount of forest management treatments that can occur. Accordingly, BECK will analyze the environmental impact of a With PREP scenario when there is a co-located sawmill at (or near) the power plant. The analysis is expected to follow the same methodology as described in Tasks 1 and 2 above.
- *Identify Water Use Conditions in Two Boiler Design Scenarios* – Biomass power plants can use significant amounts of water for condensing steam to water as it exits the turbine. Much of the cooling water evaporates to the atmosphere during the cooling process. The water to replace the evaporated material is referred to as “make-up” water. Lesser amounts are also used in venting steam and “blowdown” of water in the steam cycle to reduce impurities. For example, a water-cooled 25 MW biomass power plant can use several hundred gallons per minute. If water supply is plentiful at the PREP site then a water-cooled design is preferred because it has lower capital costs and the system is more efficient. However, if water is in short supply at the PREP site, an air-cooled design may be required. An air-cooled system uses dramatically less water but comes with the penalty of higher capital costs and a system that is less efficient at producing power. Thus, an air-cooled design is likely to require a higher power sales price in order to provide the project developer with the same return (all other things being equal).

Given these circumstances, we suggest identifying water usage (based on consultation with TRM and/or Wellons) in both a Water-Cooled Design Scenario and an Air-Cooled Design Scenario. BECK will then calculate and document the environmental and economic impacts associated with the PREP facility's water usage in each scenario.

### **Phase 2 – Task 2 (\$11,000)**

Much of the social and economic analysis in Phase 3 is based on the environmental effects and biomass facility operational considerations identified in Phase 2. To facilitate the social and economic analysis, the environmental analysis must provide certain types of findings. In this task, Highland Economics will collaborate with BECK on identifying and evaluating the environmental effects using metrics and units that are most suitable for use in the social and economic analysis to follow. This task will set up a more stream-lined Phase 3 analysis.

### **Phase 3: Social & Economic Benefits & Economic Impact Study (\$59,000)**

The purpose of this element of the study will be to bring together in one framework a holistic presentation of the social, economic, and environmental benefits and potential costs of PREP. For comparison purposes, the Social & Economic Impact Study will also evaluate the social, economic, and environmental impacts of other renewable energy options such as wind and solar projects (and fossil fuel such as natural gas) using the same framework. In this way, the complete set of benefits and costs of the proposed biomass Project can be compared in an apples-to-apples fashion with other energy options.

The socioeconomic analysis will include the following three components:

1. **Economic and social value of the environmental impacts of PREP** as identified in the environmental impact study. (\$19,000).

Economic and social benefits are based on the location-specific benefits that would be expected to accrue to residents and visitors to Prineville and Crook County, given such factors as the importance and economic use of affected water resources, the effects on water supply costs of changes in water quality, the number and health vulnerability of people affected by air quality changes, the recreation locations and uses that may be affected, the infrastructure and lives that may be threatened by wildfire, landfill costs, property values that may be affected by wildfire threat and smoke, and the type of habitats and species that may be impacted.

The results of this analysis will include quantification and description of the avoided costs of changes in wildfire risk in terms of wildfire fighting costs, infrastructure damage, public safety/threat to human life; cost savings or benefits related to water quantity and water quality changes; avoided healthcare costs from smoke/air quality; effects on property values due to wildfire threat and aesthetics from smoke/air quality; economic value to recreationists and conservationists of changes in forest health; and the value of changes in carbon emissions.

2. **Economic impacts of the economic activity associated with PREP**, including the direct and indirect jobs and income associated with the biomass plant, sawmill, and forest restoration. We will also compare the economic impact of these facilities with the economic impacts of alternative energy generation options such as wind and solar. (\$25,000).

This analysis will include assessment of direct, indirect, and induced economic impacts in all linked sectors of the Crook County economy. We will estimate total economic impacts using an IMPLAN model of the Crook County economy; originally developed by the Forest Service, IMPLAN is a standard and well-accepted economic impact model used by professional and academic economists. Highland Economics has 20 years of experience using IMPLAN models and

customizing them for the most accurate total economic impact estimates; our analyses are distinguished by our careful and informed analysis of the appropriate inputs and customization of the IMPLAN model to reflect the conditions in the local economy and industries analyzed.

- 3. Community resiliency and overall economic development benefits of PREP** expected to result from increased local baseload power generation, diversification of the local economy with new or expanded industries, reduced wildfire threat and associated quality of life benefits, and other potential economic development opportunities enabled. (\$15,000).

This analysis will portray the energy-related limitations on Prineville economic development, and what the benefits are PREP are in alleviating these limitations. Overall, the analysis will highlight how PREP could provide multi-faceted economic development benefits to the region by helping to address key economic, environmental, and social vulnerabilities that may limit long-term economic development and community resiliency in Prineville.

### **Phase 2 & 3 Review Meetings (\$2,000)**

We will hold various Task 2 review meetings with City of Prineville staff and other project stakeholders. We anticipate a minimum of two meetings, one for Task 1 of Phase 2 and one for Task 2 of Phase 2. Other review/progress meetings will be scheduled with the project stakeholders as appropriate/needed. Throughout the course of the study, we propose to have regularly scheduled meetings (such as biweekly) with the City to discuss project progress and our approach to any challenges that may arise.

### **PROJECT DELIVERABLES**

BECK and HE will provide the following deliverables:

1. A Phase 1 review meeting that summarizes all of the key assumptions to be included in the Without PREP scenario and the with PREP scenario as well as the methodology to be applied in estimating the environmental and economic impacts. The Phase 1 review meeting will also include a review of findings related to carbon containment.
2. A Phase 2 written report documenting all key findings and conclusions regarding environmental and economic impacts. Appendices will be included provide sources, methods, and key assumptions used in reaching the key findings and conclusions.
3. A Phase 2 PowerPoint slide deck to accompany the written report. It will convey all key findings and conclusions from the study in bullet point style.
4. A Phase 2 graphic presentation of study results in a one to two-page document.

## PROJECT SCHEDULE & COST

Assuming prompt approval to proceed, BECK and HE anticipate working on the project schedule shown in Table 3.

**Table 3 – Project Schedule**

Phase/Task	Start Date	End Date	Cost	Deliverable
Phase 1: Kick Off Meeting	5/4/22	5/15/22	\$2,000	Meeting to be held sometime within date range
Phase 1: Define Basis of Comparison	5/15/22	6/10/22	\$17,000	N/A
Phase 1 Carbon Containment	5/15/22	6/10/22	\$5,000	N/A
Phase 1 Review Meeting	6/10/22	6/30/22	\$1,000	BECK & HE to deliver Phase 1 Report
<b>Phase 1 – Subtotal</b>			<b>\$25,000</b>	
Phase 2: Environmental Impacts	TBD	TBD	\$70,000	Preparation of written report
Phase 2: Environmental Impacts, Ready for Economic Analysis	TBD	TBD	\$11,000	Integrated into environmental impact written report
<b>Phase 2 – Subtotal</b>			<b>\$81,000</b>	
Phase 3: Economic Impacts	TBD	TBD	\$59,000	Preparation of written report
Phase 2&3: Review Meetings	TBD	TBD	\$2,000	Delivery of Project Report
<b>Phase 3 &amp; Review Meetings – Subtotal</b>			<b>\$61,000</b>	
<b>Grand Total Cost</b>			<b>\$167,000</b>	

As shown in the preceding table, the total cost for the project is \$167,000. We propose a payment schedule that includes three payments. The first would be for \$25,000 after completion of the kick-off meeting and completion of the interim report defining the basis of comparison. The second would be for \$81,000 after completion of the environmental impact report, and the third would be for the remaining balance of \$61,000 after completing the final report and submission of all associated deliverables. Please note that travel expenses are not included in the project cost. Travel if necessary will be billed to the City of Prineville at cost. Travel is not expected to exceed \$2,000.

## APPENDIX – PROJECT TEAM BIOS & PROJECT TEAM QUALIFICATIONS/EXPERIENCE



### Barbara Wyse, Principal

Barbara Wyse is a natural resource economist with expertise in energy, forestry, recreation/tourism, habitat, agriculture, water resources, carbon, and comprehensive land use analysis. Barbara’s environmental and economic impact experience includes leading studies for counties, regions, and Tribes evaluating economic development opportunities, natural resource management and development strategies, and value to the community of environmental quality and natural resource assets. Barbara has significant experience analyzing the economics of natural resources in Central Oregon, having led the land use, socioeconomic, and environmental justice analyses for Deschutes Basin Habitat Conservation Plan as well as numerous economic analyses to support watershed plans for Ochoco Irrigation District and other districts in the region. Barbara’s other recent projects include economic impact studies of biomass/wind/solar energy facilities; economic valuation of the environmental benefits of forest restoration in several locations in California; and the economic development benefits and opportunities associated with forest restoration in the Southwestern 4FRI initiative.

#### DISCIPLINES / SPECIALTIES

*Environmental Economics*  
*Social & Economic Impact Analysis*  
*Recreation Planning & Economics*  
*Economic Development*  
*Forest Economics*

#### EDUCATION

*M.S., Agricultural and Natural Resource Economics, Oregon State University, Gamma Sigma Delta Honor Society*  
*B.A., Environmental Sciences, Duke University, Phi Beta Kappa, Magna Cum Laude*

#### Example Projects

- Land Use & Socioeconomic Deschutes Basin Habitat Conservation Plan (OR)
- Economic analysis for Deschutes Basin Watershed Plans (OR)
- Economic impacts on jobs and income of forest biomass energy projects (MT)
- Economic & environmental impact of sudden oak death disease in Oregon Forests (OR)
- Port Gamble Forest Heritage Park Master Plan Economic Analysis (WA)
- Forest Restoration & Economic Development in NE Arizona (AZ)
- Economic Value of Sonoma County Forest Restoration (CA)
- Economic Value of Riverside County Forest Restoration (CA)
- Economic & Environmental Impact of Marbled Murrelet Habitat (WA)
- Baron Ranch Land Use & Revenue Options Study (CA)
- Economics of forest and recreation on the Fort Apache Indian Reservation (AZ)
- Economic & Environmental Impact of Wind and Solar Projects (WA, OR, CA, NM, AZ)



## Travis Greenwalt

### Principal & Senior Economist

#### Summary of Experience

Travis Greenwalt is a natural resource economist with expertise in water resources, agriculture, business economics, valuation of ecosystem services, comprehensive land use analysis, and modeling of tradeoffs. His particular interest is in developing financial models and enterprise budgets for land and business managers to make informed decisions. Travis' work is often used in negotiation or litigation of water rights. He has served as lead economist and expert witness for economic studies conducted in several adjudications and water rights settlements. His work has also been used to inform valuation of specific water rights, prioritize funding opportunities for federal aid programs, to obtain financing for start-up enterprises, in forecasting and planning for economic growth for communities, and to enhance economic development. Travis regularly works with private entities, Native American tribes, attorneys, economic development groups, land use planners, trade associations, and local, state, and federal agencies. For these diverse clients, Travis has the ability to conduct and coordinate thorough, independent analysis of financial and economic issues to provide useful and innovative solutions for natural resource matters. Travis' relevant experience is highlighted below.

#### DISCIPLINE / SPECIALTIES

*Ecosystem Service Valuation  
Agricultural Economics  
Natural Resource Economics  
Water Resources  
Financial Modeling*

#### EDUCATION

*Master of Business  
Administration, The  
University of Montana  
B.S. Business Finance &  
Management,  
The University of Montana*

#### PROFESSIONAL AFFILIATIONS

*Treasurer, Missoula  
Conservation District  
Member, Western Montana  
Growers Cooperative*

#### SOFTWARE CAPABILITIES

*Microsoft PowerPoint  
Microsoft Excel  
@Risk  
Microsoft Word*

#### PUBLICATIONS

*"Valuation and Payment for  
Ecosystem Services as Tools to  
Improve Ecosystem  
Management," Chapter 12 in  
The Laws of Nature (Robbins),  
The University of Akron Press,  
2013*

#### Natural Resource Planning

##### **Ecosystem Services from Conservation, Oregon**

*Developed methodology to value ecosystem services resulting from conservation practices on agricultural land, prepared for the Oregon Watershed Enhancement Board.*

##### **Bio Char Market Analysis, California**

*Conducted a market analysis for Carbon Based Solutions, as part of their business planning effort, for biochar manufacturing in the Sonora area. This independent market analysis followed USDA elements of an acceptable feasibility study.*

##### **Benefits and Costs of Cover Crop Fallowing, California**

*Analysis of public benefits and private costs associated with cover crop fallowing program in the Pajaro Valley of California, prepared for the Resource Conservation District of Santa Cruz.*

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**Regional Economic Assessment & Strategy, Arizona**

*Economic impact analysis of the downturn in coal production for northeastern Arizona counties of Apache and Navajo. In addition, this analysis considered strategies for attracting and retaining other industrial developments, particularly around the Four Forest Restoration Initiative (4FRI), and the existing sawmill and biomass sectors already established.*

**Regional Economic Assessment & Strategy, New Mexico**

*Economic impact analysis of the downturn in coal production for northwestern New Mexico council of governments. In addition, this analysis considered strategies for attracting and retaining other industrial developments, including sawmill development potential.*

**Little Colorado River Water Claims, Navajo, Navajo Nation**

*Expert witness reports on economic analysis of Large Industrial water claims, including water needs for utilizing the biomass and commercial wood from Navajo Nation’s forests in Northeastern Arizona filed by DOJ on behalf of Navajo Nation.*

**Flathead Water Claims, Montana**

*Expert witness reports on economic analysis of Large Industrial water claims, as well as Practicably Irrigable Acreage (PIA) claims filed by DOJ on behalf of the Confederated Salish and Kootenai Tribes of the Flathead Reservation. The analyses supporting these claims considered the beneficial use of water for milling and wood product manufacturing.*

**Economic and Environmental Impacts of Forest Biomass, Montana**

*Co-authored analysis and written deliverables with Beck Group (Roy Anderson) on the economic and environmental impacts of a combined heat and power system associated with an existing sawmill in Montana. Study was completed for Northwestern Energy and Montana Department of Commerce.*

**Economic Benefit Assessment, Montana**

*Economic assessment of ability to pay for irrigators, as well as public benefits of recreators, for modifications to the East Fork Rock Creek Dam, prepared for Department of Natural Resources and Conservation (DNRC), under subcontract with DOWL HKM Engineering.*

**Economic Benefits of Forest Restoration, California**

*Analysis of economic benefits of forest restoration in terms of improved water supply and water quality. Prepared for the Santa Ana Watershed Protection Authority (SAWPA) in California.*



**Roy Anderson**

*Senior Consultant and Vice President*

Since joining The Beck Group in 2006 Roy Anderson has led a variety of strategic planning and consulting projects. For one of Roy’s specialty areas, North American timber/fiber supply and demand studies, he has completed nearly 50 biomass cogeneration supply studies. Several of the cogeneration studies that progress farther in planning included assessments of the environmental and economic impacts of the projects. These included studies for the Klamath Tribe in Southern Oregon, Lincoln County in Nevada, Southern Oregon University, and all of Western Montana for NorthWestern Energy. Each is briefly described below:

Klamath Tribes, Southern Oregon – BECK assisted the Klamath Tribes in assessing the feasibility of a variety of forest products businesses included biomass heat and power. For the biomass power plant modelled BECK assessed a variety of environmental impacts related to permitting including air quality, water quality, environmental site assessment, forest health impacts. BECK also worked with Highland Economics to assess the biomass power plant’s economic impacts.

Lincoln County, Nevada – BECK assisted Lincoln County Nevada’s economic development department to assess the feasibility of a biomass power plant in the region. Included in the analysis was an assessment of the impact forest health and water availability caused by the prospective plant when using fuel from Pinyon-Juniper forests.

Southern Oregon University – BECK completed a biomass power feasibility study for Southern Oregon University. The project was aimed at converting the university’s natural gas fired boilers to biomass. As part of the project BECK assessed the supply available from local forests and estimated that carbon footprint of the campus under its natural gas scenario relative to the carbon footprint of the proposed biomass project.

NorthWestern Energy, Montana – BECK worked as part of a team that assessed the feasibility of siting biomass power plants at sawmills throughout Western Montana. Included in the analysis was an assessment of the plants’ environmental impacts on things such as air quality and carbon emissions.

Roy has more than 25 years of experience in the field of forestry and forest products. Before joining The Beck Group, he was a forest products specialist with the Montana State University Extension Service where his responsibilities included developing and delivering forest products utilization and marketing outreach programs to Montana’s forest products industry and private forest landowners. Roy has a PhD in forest products marketing from Oregon State University, a Masters in wood science from the University of Minnesota, and a BS in forest management from the University of Wisconsin-Stevens Point. His research has been published in the *Journal of Forestry* and the *Forest Products Journal*. Roy started his forestry career in Wisconsin’s hardwood timber industry where he worked as a procurement forester, hardwood lumber salesperson, and logger.

<b>EDUCATION</b>	PHD FOREST PRODUCTS MARKETING	<i>Oregon State University (2003)</i>
	MS WOOD SCIENCE	<i>University of Minnesota-Twin Cities (1999)</i>
	BS FOREST MANAGEMENT	<i>University of Wisconsin-Stevens Point (1991)</i>

**PROFESSIONAL  
ACTIVITIES**

Oregon State University, Oregon Wood Innovation Center Advisory Council  
Society of American Foresters, Portland, Oregon Chapter, Newsletter Editor  
Oregon Woodland Cooperative, Board Member and Secretary

**Steve Courtney**

*Senior Consultant and DRJ Consulting Assistance Project Manager*

Steve Courtney joined The Beck Group in 2021 after a nearly 30 year career in the forest products industry in the US West. Steve brings to the company extensive industry experience, knowledge, and a broad contact network from various positions at major forest products manufacturing corporations including Roseburg Forest Products, International Forest Products (Interfor), and Sierra Pacific Industries. Steve’s roles at those companies included procuring raw materials for lumber and plywood operations; coordinating logistics for raw material delivery including truck, rail, and barge; developing corporate strategies to optimize log procurement among jointly owned milling operations; and buying and selling veneer products.

Steve also worked early in his career as an industry representative advocating for the timber industry on issues including US Forest Service timber sale planning, public education & outreach, and representing the industry’s interests to local, state, and federal government agencies.

During his career Steve has had the opportunity to work with a spectrum of co-workers, customers, and vendors ranging from the highest level executives at major forest products corporations to single entrepreneurs operating small forest products businesses.

Steve has a bachelor’s degree in Forest Engineering from Oregon State University and an MBA from National University.

<b>EDUCATION</b>	MBA	National University (2007)
	B.S. Forest Engineering	Oregon State University (1992)

## **BECK GENERAL QUALIFICATIONS**

- The Beck Group is an established, highly experienced forest products planning, research, consulting, and benchmarking firm. Key personnel at BECK have extensive forest industry experience. Over the last 40 years, the firm has assisted well over 200 forest products companies at more than 350 locations. Our clients range from the largest multi-national forest products corporations to very small entrepreneurs seeking to establish a forest products business.
- BECK has completed many fiber supply studies, including biomass supply for wood pellet and cogeneration (heat and power) facilities. We have also assessed timber supply for sawmills, plywood plants, etc. Our approach to fiber supply studies is always to assess not only the available supply, but also account for the existing (or planned) demand. The result is an assessment of the overall supply and demand balance within a given region.
- BECK has worked with numerous publicly and privately owned corporations and various government agencies to assist in strategic planning and/or market strategy development processes. Thus, BECK is experienced with the process of identifying the client's current position, prioritizing objectives, and developing an appropriate strategic plan.
- BECK is the forest products industry leader in Competitive Assessment (benchmarking) studies for the forest products industry. We have completed well over 50 benchmarking studies for various segments of the industry, including softwood lumber, plywood, oriented strand board (OSB), particleboard, medium density fiberboard (MDF), and hardwood lumber. Consequently, we know the actual economics – including log costs, manufacturing costs, yields, production rates, staffing levels, etc. – of most segments of the forest products industry.
- BECK has completed over 100 feasibility studies for a variety of large and small forest products businesses. Aided by the data we collect in our benchmarking studies and from other sources, we are able to make realistic projections of new business performance for issues such as capital equipment costs and production capabilities, typical raw material to finished product recovery levels, manufacturing and labor costs, equipment installation costs, finished product values and staffing levels. We also have staff with extensive training and experience in accounting so that we can present comprehensive financial projections for a prospective business, including pro forma income statements, statement of cash flows, and balance sheets. We have the tools and the experience to complete the desired work in a cost effective and timely manner.
- We are a people-oriented company. We have a very practical, results-oriented approach



## **PHASE 1 - PROJECT ACCEPTANCE AGREEMENT**

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This document serves as the contract agreement for Phase 1 of the consulting assistance project as described in The Beck Group's project proposal letter dated May 2, 2022. A separate agreement will be made covering work for Phases 2 and 3.

### **CITY OF PRINEVILLE – PRINEVILLE RENEWABLE ENERGY PROJECT (PREP)**

Upon project acceptance, the City of Prineville agrees to assist The Beck Group in completing the described project activities, including making available the appropriate management and administrative personnel and allowing access to required information.

### **CONFIDENTIALITY**

The Beck Group agrees to keep confidential all information relating to City of Prineville (PREP) including, but not limited to, strategies and proprietary product and process information.

With acceptance, the City of Prineville agrees to keep confidential all concepts, documents, programs, systems, and other proprietary features used or applied by The Beck Group for the project activities described herein.

**Submitted by:**

**Accepted by:**

**THE BECK GROUP**

**CITY OF PRINEVILLE**

By

Roy Anderson  
Vice President

By

Name: Steve Forrester  
Title: City Manager

**Date**

May 9, 2022

May 25, 2022

## Exhibit B

### 1. General description of the scope of work-

The environmental and economic analysis will examine social, economic, and environmental benefits and potential costs of the Prineville Renewable Energy Project. The analysis will include the following components:

- **Establish baseline conditions-** identify the changes in environmental, social, and economic outcomes for Prineville and Crook County from PREP vs. alternative sources of energy
- **Forest health and wildfire risk-** determine how PREP-associated restoration would reduce fire and improve forest health
- **Environmental impact-** quantify the change in air emissions, water supply available for human use and instream flows, water quality, habitat, the amount of carbon stored and emitted, etc.
- **Economic value of environmental impact-** convert environmental impacts into valuation of what people care about, including the costs of fire damage and wildfire fighting, water supply costs, recreation opportunities and benefits, property values, reduced health care costs, and improve aesthetics
- **Jobs, income, and community resiliency-** quantify the direct and indirect jobs and income benefits of PREP, examine the multi-faced economic development benefits of PREP related to key economic, environmental, energy, and social vulnerabilities that may limit long-term economic development and community resiliency in Prineville
- **Carbon capture technology-** determine whether or not the technology would be feasible to employ with the PREP

### 2. Total cost to the City for the delivery of services:

\$167,000 broken out into three phases:

Phase 1: \$25,000

Phase 2: \$81,000

Phase 3: \$61,000

### 3. Expertise of the contractor in the requires area of specialty-

The BECK Group is a forest products planning and consulting firm based in Portland, Oregon with more than 40 years of experience. The company has experienced staff and is well known in the forestry and forest products industry in the area of biomass heat and power. Highland Economics specializes in analysis of forests, water, recreation, energy, carbon, air, and habitat resources. Together, the BECK Group and Highland Economics have relevant project experience working on more than nine different projects, including biomass energy projects.

- ### 4. References regarding prior work done by the Contractor-
- The BECK Group and Highland Economics came highly recommended by Sustainable Northwest and similar project work includes biomass related projects for the Klamath Tribes, NorthWestern Energy, and Southern Oregon University.

**5. Capacity and capability to perform the work, including any specialized services within the time limitations for the work**

Based on prior project experience, the BECK Group and Highland Economics have the expertise necessary to complete the analysis and are available in a timeframe that is acceptable to the City of Prineville to complete the work.

**6. Educational and professional records, including past records of performance on contracts with governmental agencies and private parties with respect to cost control, quality of work, ability in schedules, and contract administration, where applicable**

Educational records for the project team include:

- Roy Anderson- PHD Forest Products Marketing, M.S Wood Science
- Barbara Wyse- M.S. Agricultural and Natural Resource Economics

The BECK Group and Highland Economics have committed to a project budget not to exceed \$167,000 for the deliverables presented as well as an acceptable project timeline.

**7. Availability to perform the assignment and familiarity with the area in which the specific work is located**

The BECK Group and Highland Economics are familiar Oregon and with the Central Oregon region.

**8. Timeliness of delivery of service-**

Both the BECK Group and Highland Economics have committed to a project timeline that is acceptable to the City of Prineville.

**9. Experience in working with the City**

The BECK Group and Highland Economics do not have prior experience working with the City.

**10. Knowledge of City's needs and desires related to the Contract-**

An initial meeting was held with the City, the BECK Group, and Highland Economics to discuss the project and the City's needs and desires were clearly communicated at that time. In response, the proposed scope of work encompasses all key points the City desires to have addressed.