CHAPTER 2
ALTERNATIVE OPTIONS SELECTION

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BROWN AND CALDWELL

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CHAPTER 2

ALTERNATIVE OPTIONS SELECTION

2.0 Introduction

In the near future, the Bridge Creek Supply System (BCSS) may not be able to continue to meet the City of Bend's (City) potable water demand reliably. Its aging infrastructure, risk of fires in its watershed, and new regulations will require the system to be upgraded. To address these issues, the City retained the services of a consultant team led by Brown and Caldwell to identify and develop the best alternative that will satisfy these impending demands.

This chapter documents the alternative identification and screening process that led to the selection of a preferred alternative: the construction of a water treatment plant and a hydropower facility at the Outback site and the replacement of the existing intake mains with a penstock. This alternative will be the object of further refinement in the subsequent efforts of this project.

2.1 Background: Existing Conditions

The City depends on surface water from the BCSS and locally developed groundwater to meet its potable water demands. To meet the future projected demands, the City Master Plan contemplates increasing the capacity of the groundwater supply.

The BCSS currently provides half the annual water supply to the City. In general, the BCSS is used to meet all of the City's winter water demand, which currently averages 6 million gallons a day (mgd) and peaks at about 26 mgd. As demand increases in the spring season, wells are used to provide additional flow beyond what is available from the BCSS.

The components of the BCSS are described in the following sections.

2.1.1 BCSS

The existing BCSS includes a diversion works that captures pure spring flows and a canal that diverts the spring into the headwaters of Bridge Creek; an intake works on Bridge Creek; the Intake Mains from the Bridge Creek Intake to Outback; and the Outback Chlorination and Storage Facility. The system conveys water from elevation 4,992 feet at the Bridge Creek Intake to the elevation 3,980 foot elevation at the chlorine contact basin (see Figure 2-1).

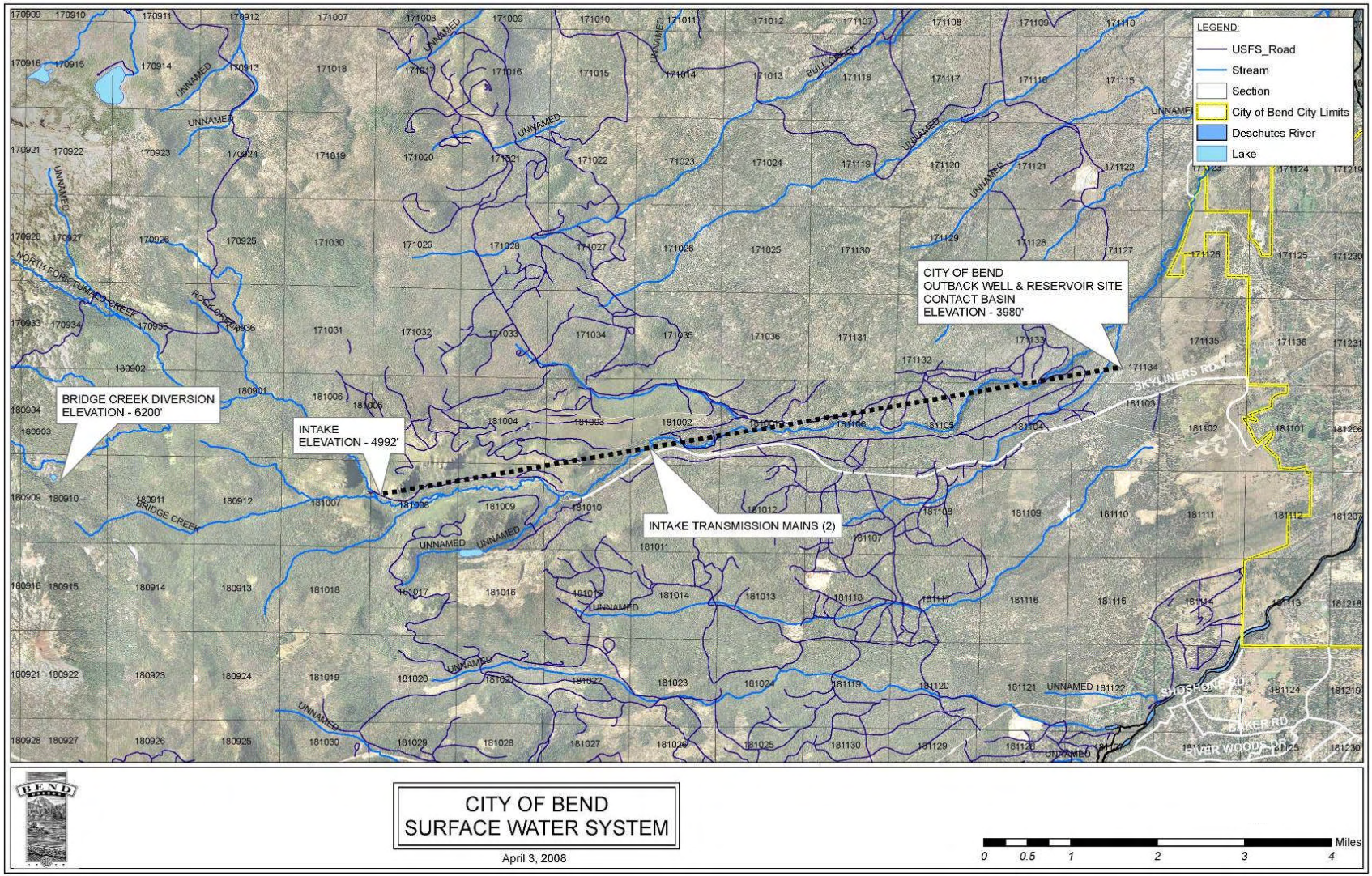


Figure 2-1. BCSS Site Map

Each of the key components is described in additional detail in the following subsections.

2.1.1.1 Bridge Creek Intake

Built in 1926, the Bridge Creek Intake facility includes a dam, overflow, debris screen, and caretaker's building. The intake consists of a small concrete gravity dam with a side channel intake from the pond created by the small dam. Inside the diversion structure is a series of screens that filter out leaves and other debris. Water entering the intake is diverted into two conduits that convey the water to the Outback Storage and Treatment Facility.

A small wood frame structure, originally constructed as the caretaker's residence, sits on top of the intake structure. The building has been updated several times, though much of its original structure, including its metal siding, still remains. The building is now used to house water monitoring equipment and is the focus of limited seasonal tours.

2.1.1.2 Intake Mains

Welded steel pipes, 14 and 16 inches in diameter, run 10 miles to connect the Bridge Creek Intake facility with the Outback site. The pipelines were installed in 1926 and 1956, respectively, and have been repaired several times. Some of their reaches have been replaced with larger sections, up to 20 inches in diameter.

Most of the pipes' alignment lies within heavily forested areas, on U.S. Forest Service (USFS) land. The pipelines also cross several private properties on City easements. In several easements, structures encroach the conduits' alignments. Tree roots and structure loading have contributed to the accelerated deterioration of the pipes and the development of leaks.

The conduits were designed with small diameters to develop high flow velocities that burn the excessive potential energy associated with the drop from the 4,992-foot elevation at Bridge Creek Intake to the 3,980-foot elevation Outback site overflow. The original capacity of the pipelines is not known.

2.1.1.3 Background

The Outback site contains the terminal storage tanks for the BCSS. The conduits discharge into a steel tank, retrofitted as a Chlorine Contact Basin, where the BCSS water is chlorinated. The chlorinated water then overflows to other storage tanks at the site, which feed by gravity into the City's distribution system.

The site also contains groundwater wells that pump to a dedicated storage tank. These groundwater wells, in addition to others in the City, supplement the BCSS whenever the system demands exceed the BCSS capacity or during periods when the BCSS is too turbid to use.

2.1.2 Challenges to the Bridge Creek Supply

The City has identified three primary challenges to the continued use of the BCSS.

- Meeting 2012 U.S. Environmental Protection Agency (USEPA) regulations
- Addressing aging infrastructure
- Mitigating the water quality impacts from a large wildfire in the watershed

The magnitude of these challenges will be explained further in the following paragraphs.

2.1.2.1 Meeting 2012 Regulations

The BCSS is an approved unfiltered water system. Per USEPA, unfiltered public water systems that use surface water or groundwater under the direct influence of surface water serving 50,000 to 99,999 people must have started 24 months of source water monitoring for Cryptosporidium by April 2007. In addition, these systems must report their average of all Cryptosporidium sample results to USEPA or to the state by September 2009 to determine treatment requirements listed in Table 2-1. The required treatment systems must be installed and in operation by September 30, 2012.

Table 2-1. Inactivation Requirements for Unfiltered Systems

Cryptosporidium concentration, oocysts per liter	Required Cryptosporidium inactivation
<0.01	2-log
>0.01	3-log

Under certain circumstances, which may include a system with active capital improvements intended to achieve regulatory compliance, USEPA can extend the compliance deadline by 24 months.

2.1.2.2 Addressing Aging Infrastructure

Essential components of the BCSS are 50 to 80 years old. Inspection by the City of the two 10-mile-long intake mains that convey the surface water to the Outback Storage and Treatment Facility revealed many areas with severe overgrowth of trees in the easements and over the pipelines. Evidence of root intrusions in the pipelines has been found as root debris in the storage reservoirs at the Outback facility. The level of service of other components is uncertain. Designed and constructed to 1926 standards, the reliability of the Bridge Creek Intake Dam may not meet the standards of a lifeline facility, as defined by the American Society of Civil Engineers.

Subsequent chapters will evaluate the condition of Bridge Creek Intake and determine pipe replacement alternatives.

2.1.2.3 Mitigating Fire Danger in Watershed

A large fire in the Bridge Creek watershed would result in a high sediment loading in Bridge Creek. This would cause the water quality of the system to exceed the drinking water standards for one to several years. The water quality impact of fires was already witnessed by the City in past events. The BCSS is essential to meet the City's daily summer demands; its unavailability would create a serious water shortage.

The likelihood of a wildfire is currently increased by the large amount of dead trees in the Bridge Creek watershed. The USFS has estimated that dead trees amount to 40 percent of the tree inventory in the watershed.

2.2 Alternative Description

The alternatives considered to address the challenges facing the continued use of the BCSS are outlined in this section. Figure 2-2 provides a summary of the alternatives that are described in detail below.

Though the actual quantity of available BCSS water varies throughout the year, this evaluation assumes its capacity to be 13.5 mgd.

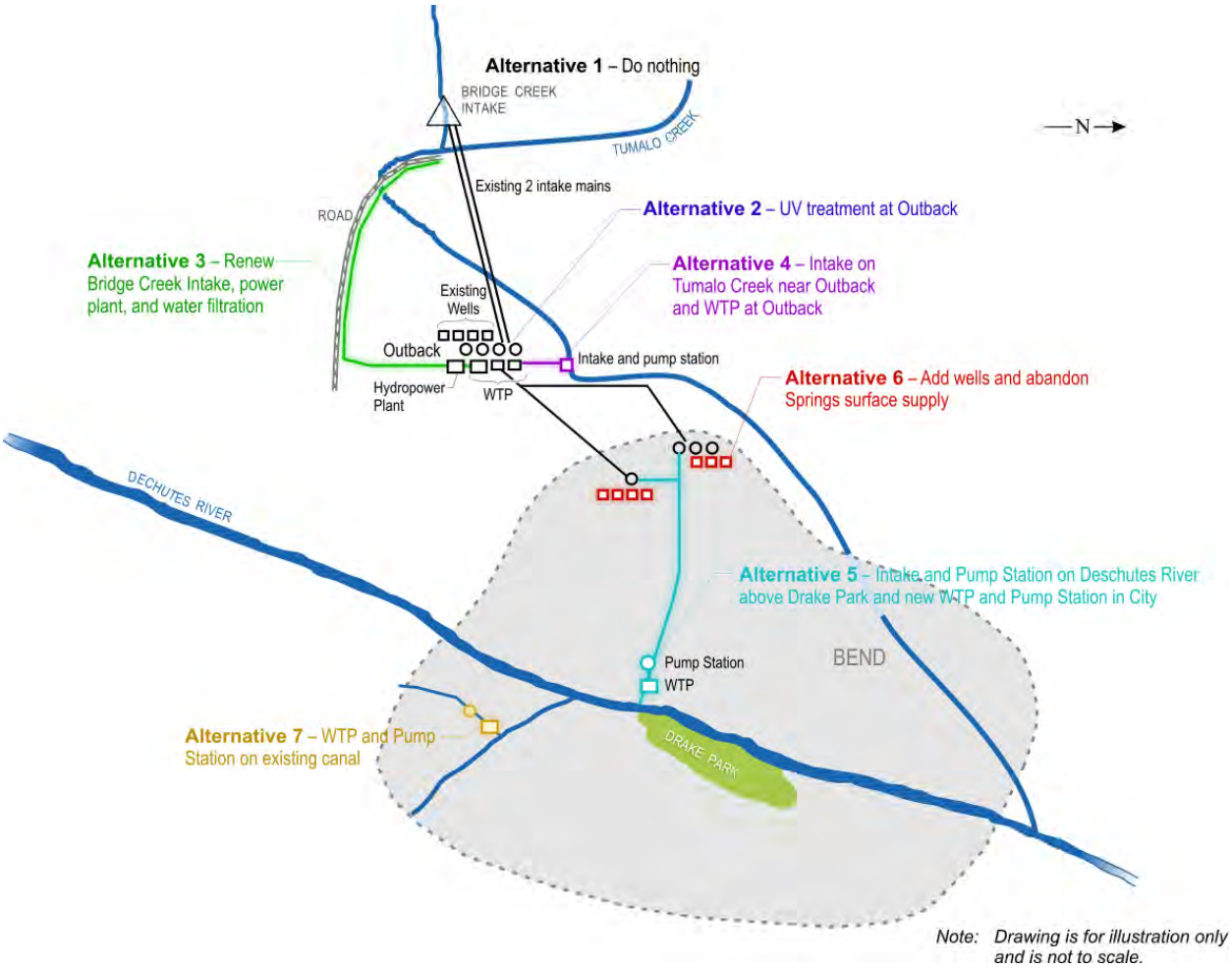


Figure 2-2. Alternative Summary

2.2.1 Alternative 1—Do Nothing

As the title implies, Alternative 1 will leave the existing system of structures and pipelines as is and will not make any major improvements to them. This option will result in abandonment of the BCSS in 2012 when it will no longer be in compliance with USEPA regulations.

2.2.2 Alternative 2—No Upgrades to Springs WSS but Add Ultraviolet (UV) Disinfection

Similar to Alternative 1, Alternative 2 does not make major capital improvements to the existing BCSS. However, this option includes the addition of UV disinfection at the Outback facility. The addition of UV disinfection will keep the Springs Water Supply System (WSS) in compliance with USEPA beyond 2012 when regulations require additional disinfection on unfiltered supplies. It does not reduce the risk of water quality impacts from fire in the Bridge Creek Watershed or failure of the 1926/1956 pipelines.

2.2.3 Alternative 3—Renew Bridge Creek Intake and Filter Water

Alternative 3 will provide major capital upgrades to the BCSS, including the following:

- Seismic and structural upgrade to the Bridge Creek Dam, Intake, and caretaker's structure
- Installation of a new fish/debris screen at the Bridge Creek Intake
- Replacement of the intake mains with a new penstock to the Outback site
- Installation of new hydropower facilities at the Outback site
- Installation of a new water filtration plant at the Outback site that will be designed to treat water in the event of degraded water quality associated with impacts from a local forest fire and will meet the 2012 USEPA requirements

The improvements will tie into the existing system at the Outback site and will continue to use the other infrastructure for the City's distribution system.

2.2.4 Alternative 4—Intake on Tumalo Creek near Outback Site

Alternative 4 will abandon the BCSS and will install an intake and pump station on Tumalo Creek near the Outback site. Alternative 4 will include a new water filtration plant, similar to Alternative 3, but will not include the hydropower facilities. The Tumalo Creek facilities will require a sophisticated, wild-river intake and will be installed in an environmentally sensitive area with protected aquatic species.

2.2.5 Alternative 5—Intake and Pump Station on Deschutes River

Alternative 5 will abandon the BCSS and will include installation of a new intake and pump station on the Deschutes River near Drake Park. Alternative 5 will require a fish screen at the intake on the Deschutes River and will include a new water treatment plant. The treatment plant will be more sophisticated than the filtration plant for Alternatives 3 and 4. Additional treatment processes will be needed to remove organic carbon, taste, and odor. The Deschutes River supply will also require an additional pump station after the treatment plant to pressurize the water for the distribution system. The supply location will make mixing with the local groundwater supply more problematic unless the supply has a direct pipeline to the Outback site.

2.2.6 Alternative 6—Increase Well Capacity and Abandon Bridge Creek Supply System

Alternative 6 will abandon the BCSS and will expand the City's use of local groundwater. The City will need to replace the Springs WSS with additional well capacity. The local wells will be located at the Outback site and throughout Bend and will be in addition to the wells that are already planned to meet the City's future growing water demands.

2.2.7 Alternative 7—New Supply on Existing Canal

Alternative 7 will be similar to Alternative 5 but will take advantage of the existing fish screens at the inlet to a canal from the Deschutes River. This alternative will avoid the direct intake on the Deschutes River. The treatment requirements will be similar to that of Alternative 5, but will need to address the potential water quality degradation associated with flow in the open irrigation canal. In addition, the pumping requirements likely will be more extensive than those required for Alternative 5, since the treatment plant will be located farther from the major storage for the City's distribution system and will likely require a new major river crossing pipeline.

2.3 Alternatives Screening

This section describes the evaluation and screening process for selecting the preferred alternative. The screening was conducted in two phases. Phase 1, conducted during the workshop kick-off meeting, identified the alternatives that merited more detailed development. Phase 2, as documented below, performed the selection of the preferred alternative.

The evaluation and screening process used is built upon identifying the full life-cycle cost or full cost of ownership of an alternative. The full cost of ownership is composed of the capital cost; the operational, maintenance, and refurbishment costs; the environmental and community costs; and the risk inherent to each one of these elements. The alternative that delivers and maintains the required level of service with the lowest cost of ownership as measured by its net present value (NPV) is by definition the preferred alternative.

The initial screening that was conducted as part of the January 7 and 8, 2009 project initiation meeting, was based on a combination of preliminary capital and operational costs developed by Brown and Caldwell for the meeting, a qualitative assessment of the overall project risks, and the specific risks for potential alternatives. The process was used to select the preferred alternative.

2.3.1 Business Case Evaluation (BCE)

We used the BCE process to identify the full cost of ownership. A BCE consists of the following steps:

1. Appoint a BCE expert team
2. Define the problem and set the level of service (LOS)
3. Collect data on the current situation
4. Identify alternatives based on meeting the LOS
5. Screen alternatives and eliminate those that do not meet the required LOS
6. Develop cost information for viable alternatives
7. Compare viable alternatives based on NPV

The BCE differs from a conventional engineering evaluation because it includes the assignment of a multi-disciplinary team with knowledge of all aspects of the life-cycle of the alternatives and clear definition of the problem in LOS terms and the consideration of environmental, community, and risk costs. Additional description of the BCE process is provided in Appendix A.

2.3.2 Initial Screening Workshop

The initial screening workshop was conducted in Bend on January 7 and 8, 2009. The workshop participants are listed in Appendix B. During the workshop, the problem was defined, risk categories were identified, a qualitative score was assigned, potential mitigation measures were identified, and the risks were ranked.

Subsequent to the workshop, the initial alternatives were screened for fatal flaws based on meeting the required LOS. The remaining alternatives were ranked based on the combination of cost and the qualitative risk score. The problem statement, LOS fatal flaw analysis, and risk quantification are presented below.

2.3.2.1 The Problem Statement

Following is the problem statement developed at the workshop.

> **The City is not able to assure current and future surface water supply quality and quantity and to meet regulatory requirements.**

Expressed in LOS terms, potential alternatives must accomplish the following:

- Provide water capacity equivalent to current surface water supply
- Comply with regulatory requirements
- Deliver high level of water quality reliably

The underlying root cause of the problem was identified as follows:

- Compliance with USEPA Surface Water Rules is projected to be imposed by September 30, 2012
- There is a risk of contamination of the surface water source
- There is a risk of a forest fire in the watershed which could degrade the raw water quality
- There is increased risk of structural failure due to the aging infrastructure.
- With continued urbanization of Bend, there is a risk to water quality from increased human activity in the watershed

2.3.2.2 Alternative LOS Fatal Flaw Screening

The results of the fatal flaw analysis of the seven alternatives identified earlier are illustrated in Table 2-2.

Table 2-2. Fatal Flaw Analysis

Alternative number	Alternative description	Meets LOS objectives		
		Capacity of surface supply	Regulatory compliance	Reliable high quality water
1	Do nothing	No	No	No
2	No upgrades to BCSS but add UV disinfection	Yes	Yes	No
3	Renew Bridge Creek intake and filter water	Yes	Yes	Yes
4	Intake on Tumalo Creek near Outback site	Yes	Yes	Yes
5	Intake and pump station on Deschutes River	Yes	Yes	Yes
6	Increase well capacity and abandon BCSS	Yes	Yes	Yes
7	New supply on existing canal	Yes	Yes	Yes

The alternatives remaining after the LOS fatal flaw screening are as follows:

- Alternative 3–Renew Bridge Creek Intake and filter water
- Alternative 4–Intake on Tumalo Creek near Outback site
- Alternative 5–Intake and pump station on Deschutes River and abandon BCSS
- Alternative 6–Increase well capacity and abandon BCSS
- Alternative 7–New supply on existing canal and abandon BCSS

2.3.2.3 Risk Assessment and Quantification Process

Risk is defined as the product of the likelihood and the consequence of a risk occurrence. For the qualitative analysis, a scale of 1 to 5 was utilized to score the probability of the risk event occurring. A similar 1 to 5 scale was used to assign the magnitude of a scope and schedule increase. The specific values utilized in the risk assessment are listed in Table 2-3.

Table 2-3. Qualitative Risk Assessment Basis of Scoring			
Score	**Probability, percent**	**Scope increase, percent**	**Schedule increase, percent**
1	<10	Insignificant	Insignificant
2	11-25	<10	<20
3	26-50	11-20	21-40
4	51-75	21-40	41-80
5	>75	>40	>80

The risk assessment process consists of the following steps:

1. Identify potential areas of risk
2. Develop specific risks and their potential mitigation
3. Organize the information in a risk register
4. Undertake the qualitative analysis and apply 1 to 5 points to the probability, scope and schedule impacts
5. Assign specific risks to the evaluated alternatives

The risk score of a risk category is the aggregate of the risk of scope increase and schedule increase. It is computed per the following formula:

$$\textit{Probability} \times \textit{Scope Increase} + \textit{Probability} \times \textit{Schedule Increase}$$

A higher score corresponds to a higher risk.

2.3.2.4 Potential Risk Area Categories

The following risk categories were identified:

- Regulatory/permitting water rights
- Potable water supply
- Forest service
- Hydropower implementation
- Natural disasters
- Construction and operational costs
- Financial viability
- Stakeholders

Table 2-4 lists the output of the risk assessment process by risk category and overall ranking.

Table 2-4. Risk Matrix Prioritized by Overall Ranking

Risk category	Risk description	Probability	Scope consequence	Schedule consequence	Potential mitigation response	Comments	Scope score	Schedule score	Total score
Potable water supply	Ability to add new wells	5	4	5	Exchange surface water for additional groundwater rights >1:1?	Water rights, 200 cubic feet per second (cfs) cap upper basin, hydrogeologic, infrastructure, permits, science, land procurement	20	25	45
Regulatory/permitting/water rights	Hydro permit for new water rights	5	3	5	Agreement with stakeholders, section D mitigation	Up-front dollars	15	25	40
Regulatory/permitting/water rights	Hydro permit FERC	5	3	5	Agreement with stakeholders, section D mitigation, USFS relationships	Endangered Species Act (ESA) Nexus	15	25	40
Regulatory/permitting/water rights	Unknown time, mitigation, public, operational constraints	5	3	5			15	25	40
Disasters	Watershed fire	5	3	5		Question of when and how big–accelerate schedule. Different approaches if WTP is online.	15	25	40
Stakeholder issues	Competition for in-stream water	4	4	5	Temperature Model no impact on reach B?	Cold water take water away from generation	16	20	36
Financial viability	Council support	3	5	5		Potential no project	15	15	30
Stakeholder issues	Impact on ongoing initiatives with other local agencies	3	4	5	DWA signed		12	15	27
Regulatory/permitting/water rights	Hydro permit for existing water rights	4	2	4	Agreement with stakeholders, section D mitigation	Upfront $	8	16	24
Potable water supply	Conversion of 15 cfs permit to water right	4	2	3		Reaches B and D. Have to get extension before 'prove' up. Issue of prior groundwater applications	8	12	20
Potable water supply	Ground water regulations, i.e., requires treatment	2	5	5		Gordon Grant Study EWEB, timing of surface water, most of the resource is groundwater	10	10	20
Financial viability	Ability to raise rates	5	1	3			5	15	20
Disasters	Earthquake	2	3	5	County? City has done analysis that requires fixing specific breaks.	Take out Bridge Creek and pipeline, bolted tanks	6	10	16
Financial viability	Local economic recovery delayed	4	1	3		Ability to get increased rates	4	12	16
Hydro power implementation	Power cost fluctuations up wells	5	2	1		Negative	10	5	15
Disasters	Pipeline failure	5	2	1		Accelerate	10	5	15
Potable water supply	Conversion of surface water to groundwater injection aquifer storage and recovery recharge	4	2	1	Critical factor in economic analysis	Not on critical path, trigger full groundwater studies	8	4	12
Forest service	Existing Easements disagreement	2	3	3			6	6	12
Construction/operational cost issues	Bidding climate	3	3	1			9	3	12
Financial viability	Availability and cost of project financing	2	3	3		Stimulus package	6	6	12
Stakeholder issues	Ill defined public response	3	1	3		Gets more negative as economy. Green initiative is a plus.	3	9	12
Potable Water Supply	EPA Water Quality Standards	1	5	5		Issues beyond what we know	5	5	10
Forest Service	Missed opportunity for joint road investment	1	5	5			5	5	10
Hydro power implementation	Tax incentive changes	2	3	2		High probability of improving	6	4	10
Hydro power implementation	Timing when power can be produced	2	3	2			6	4	10
Regulatory/permitting/water rights	ESA issues Tier II watershed	3	2	1	Addressed by mitigation	Reach B	6	3	9
Regulatory/permitting/water rights	USEPA no flexibility to adjust 2012 schedule	3	2	1	Maintain current staff relationships, proactive friendly compliance order	Portland strategy to have exemption in Oregon Administrative Rules, stretches financing	6	3	9
Construction/operational cost issues	Construction material inflation	3	2	1			6	3	9
Regulatory/permitting/water rights	Outback Conditional Use	2	2	2	Early communication	USFS	4	4	8
Potable water supply	Permitting for new distribution	1	3	4		Connecting new wells in the system	3	4	7
Hydro power implementation	Value of Green tags	1	5	2		Currently low expect to increase	5	2	7
Regulatory/permitting/water rights	USEPA regulatory, total maximum daily load	2	2	1	Addressing D segment, i.e., wet, run water quality model		4	2	6
Regulatory/permitting/water rights	Triggering of National Environmental Policy Act requirements (creek crossings, new alignment)	3	1	1	Avoid creeks (go under), relocate out of wetland	Impacts can be avoided	3	3	6
Hydro power implementation	Power cost fluctuations down hydro	1	5	1		Positive	5	1	6
Disasters	Other infrastructure failure ,wells, tanks diversion	2	2	1			4	2	6
Construction/operational cost issues	Operations staff challenge of new facilities (wells)	3	1	1		Bigger issue if all wells. City has standby power. Can plant operations be 24-hour?	3	3	6
Hydro power implementation	Availability of infrastructure for interconnects to grid	1	2	1			1.2	2.1	3.3
Regulatory/permitting/water rights	Land use permits/conditional use (City, county, federal)	1	1	1		City involved in well permitting	4.1	5.1	6.2
Potable water supply	Litigation from other water agencies, potable and irrigation	1	1	1	Already have agreements with irrigation districts		7.1	8.1	9.2
Potable water supply	Climate change impacts on flows	1	1	1		Climate change a high probability however impact on Springs	1	1	2
Hydro power implementation	Willingness of Central Oregon Co-op to wheel power	1	1	1			1	1	2
Construction/operational cost issues	Operating system under new constraints	1	1	1			1	1	2

Allocation of identified risks to the screened alternatives is presented in Table 2-5. The alternative assigned the highest risk is Alternative 7, followed in descending order by Alternatives 3, 6, 4, and 5. The highest risk categories carried by Alternative 3 are related to the risks of implementing the hydropower element of the project.

Table 2-5. Risk Matrix–Prioritized by Risk Category

Risk number	Risk description	Risk score	Alternative risk allocation				
			3 BCSS	4 Tumalo Creek	5 Deschutes River	6 GW	7 Canal
1	Ability to add new wells	45	0	0	0	45	0
2	Hydropower permit for new water rights	40	40	0	0	0	0
3	Hydropower permit for Federal Energy Regulatory Commission	40	40	0	0	0	0
4	Unknown time, mitigation, public, operational constraints	40	0	40	40	40	40
5	Watershed fire	40	0	0	0	0	0
6	Competition for in-stream water	36	36	36	36	0	36
7	Council support	30	0	30	30	30	30
8	Impact on ongoing initiatives with other local agencies	27	27	27	27	27	27
9	Hydropower permit for existing water rights	24	24	0	0	0	0
10	Conversion of 15 cfs permit to water right	20	20	20	20	20	20
11	Groundwater regulations, i.e., requires treatment	20	0	0	0	20	0
12	Ability to raise rates	20	0	20	20	20	20
13	Earthquake	16	0	0	0	0	16
14	Local economic recovery delayed	16	0	16	16	16	16
15	Power cost fluctuations up wells	15	15	0	0	15	0
16	Pipeline failure	15	0	0	0	0	0
17	Conversion of surface water to groundwater injection aquifer storage and recovery recharge	12	12	12	12	12	12
18	Existing easements disagreement	12	12	12	0	0	12
19	Bidding climate	12	12	12	12	12	12
20	Availability and cost of project financing	12	0	12	12	12	12
21	Ill defined public response	12	12	12	12	12	12
22	USEPA water quality standards	10	0	0	0	10	0
23	Missed opportunity for joint road investment	10	0	10	10	10	10
24	Tax incentive changes	10	10	0	0	0	0
25	Timing when power can be produced	10	10	0	0	0	0
Cumulative risk score			270	259	247	268	275

2.3.2.5 Combining Preliminary Cost Data with Qualitative Risk Scores

The net present value of the alternatives and the risk scores are combined in Table 2-6. Alternative 3 is clearly the alternative with the lowest adjusted NPV that meets the LOS requirements, followed by Alternatives 4, 6, 5, and 7, respectively. As identified in the risk assessment, Alternative 3 carries the unique risks related to obtaining regulatory approval for the hydropower portion of the alternative. In the further evaluation of the preferred alternative in this phase and subsequent phases, the specific risks and mitigation strategies to manage the regulatory risks will be developed.

Table 2-6. Final Alternative Ranking

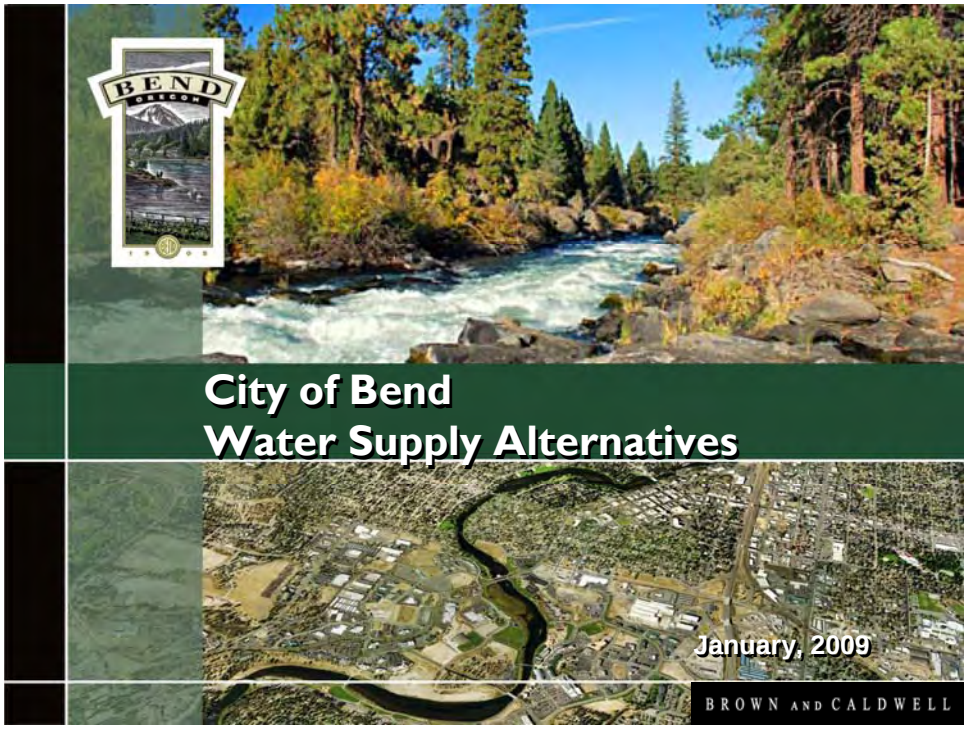
Alternative number	Alternative description	NPV, $ millions	Relative NPV	Risk score	Risk cost adjustment factor	Combined NPV/risk relative score	Alternative ranking
3	Renew Bridge Creek intake and filter water	23.00	1	270	1.09	1.09	1
4	Intake on Tumalo Creek near Outback site	(70.40)	(3.06)	259	1.05	(3.21)	2
5	Intake and pump station on Deschutes River	(94.20)	(4.10)	247	1	(4.10)	4
6	Increase well capacity and abandon BCSS	(88.10)	(3.83)	268	1.09	(4.16)	3
7	Intake and pump station on existing canal	(104.60)	(4.55)	275	1.11	(5.06)	5

Notes:

1. The NPV numbers for this analysis were developed from preliminary estimates of cost and revenue generated for this purpose by Brown and Caldwell. They are included in Appendix C.
2. The Relative NPV is the NPV of an alternative divided by the NPV of the lowest cost alternative. As an example for alternative the Relative NPV of Alternative 6 is negative $88.10 million divided by positive $13.00 million or negative 3.83.
3. Risk cost adjustment factor is the normalized risk score relative to the lowest risk alternative. In this case, the specific alternative risk score divided by 247.
4. Combined NPV/risk relative score is the product of the relative NPV multiplied times the risk cost adjustment factor. As an example, for Alternative 6 the value is negative 3.83 X 1.09 = (4.16).

APPENDIX 2-A

Description of the Business Case Evaluation Process



BCE Process for Selecting the Preferred Alternative

- Identifies the Full Cost of Ownership by Considering and Monetizing:
  - Capital
  - O&M
  - R&R
  - Community
  - Environment
  - Risk
- Preferred Alternatives Defined by Lowest Cost of Ownership that meets the Level of Service.

BROWN AND CALDWELL

The Business Case Evaluation Process

Form Expert Team
↓
Describe Service Level Required of System
↓
Document Problem Statement
↓
Identify Alternative Solutions
↓
Eliminate Fatally Flawed Alternatives
↓
Develop Total Cost-of-Ownership for Each Alternative
↓
Select Preferred Alternative
↓
Document Decision

BROWN AND CALDWELL

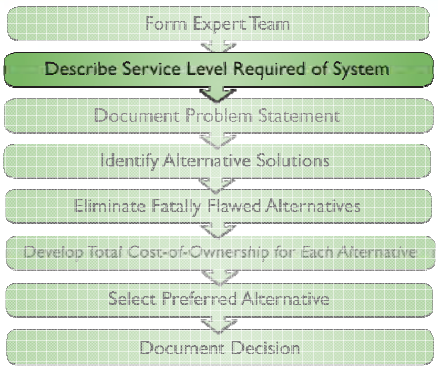
Form Expert Team

Form Expert Team
↓
Describe Service Level Required of System
↓
Document Problem Statement
↓
Identify Alternative Solutions
↓
Eliminate Fatally Flawed Alternatives
↓
Develop Total Cost-of-Ownership for Each Alternative
↓
Select Preferred Alternative
↓
Document Decision

- Experience in Operating System
- Experience in Maintaining System
- Experience in Planning System
- Experience in Financing / Budgeting
- Experience in Engineering
- Knowledge on Project Objectives
- Utility-wide Perspective
- 'Subject' Expertise

BROWN AND CALDWELL

Describe Service Level Required of System



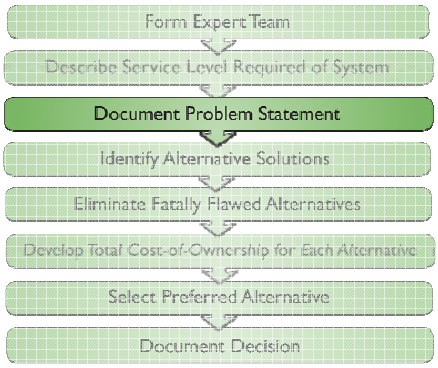
Describing the service level requirement identifies what is expected.

Expectations for alternatives can be summarized in categories:

- Performance (e.g. capacity, efficiency, water quality, etc.)
- Reliability (e.g. expected O&M activities, redundancy, etc.)
- Sustainability (eCO_2, fossil fuel)
- Financial (bonding, rates)

BROWN AND CALDWELL

Document Problem Statement



- Define the problem in terms of level of service
- Understand the root cause for the project
- Document the Problem

BROWN AND CALDWELL

Identify Alternative Solutions

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- **Identify Alternative Solutions**
- Eliminate Fatally Flawed Alternatives
- Develop Total Cost-of-Ownership for Each Alternative
- Select Preferred Alternative
- Document Decision

Potential solutions include:

- Do nothing new –retain existing system
- Water Treatment
- New Intakes
- Investment of R & R of existing assets
- New water sources
- Water rights transfer
- Maximizing hydro-electric potential

Each alternative should include:

- Description of solution and the system elements
- Potential O&M issues
- Community Impacts
- Environmental Impacts
- Risk

BROWN AND CALDWELL

Eliminate Fatally Flawed Alternatives

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- Identify Alternative Solutions
- **Eliminate Fatally Flawed Alternatives**
- Develop Total Cost-of-Ownership for Each Alternative
- Select Preferred Alternative
- Document Decision

- Eliminate from consideration any solutions that are fatally flawed.
- Inability to solve problem or meet level of service requirement.
- Document fatal flaws
- Only viable solutions are subject to detailed evaluation.

BROWN AND CALDWELL

Compare Cost-of-Ownership for Each Alternative

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- Identify Alternative Solutions
- Eliminate Fatally Flawed Alternatives
- **Develop Total Cost-of-Ownership for Each Alternative**
- Select Preferred Alternative
- Document Decision

Cost-of-ownership includes:

- Capital Costs (permits, engineering, construction, mitigation)
- Ongoing base O&M/R&R Costs
- Community Costs
- Environmental Costs
- Risk Costs (Risk is defined by identifying potential failure modes, assigning a probability to each failure mode, and identifying the cost of a failure.)The product of the annual probability of a failure and the cost of a failure is the annual risk cost.
- Adding these costs and reformulating all costs into net present value (NPV) allows for comparing alternatives

BROWN AND CALDWELL

Select Preferred Alternative

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- Identify Alternative Solutions
- Eliminate Fatally Flawed Alternatives
- Develop Total Cost-of-Ownership for Each Alternative
- **Select Preferred Alternative**
- Document Decision

The preferred alternative is the alternative with the lowest total cost-of-ownership in terms of NPV that meets the Level of Service

BROWN AND CALDWELL

Document Decision

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- Identify Alternative Solutions
- Eliminate Fatally Flawed Alternatives
- Develop Total Cost-of-Ownership for Each Alternative
- Select Preferred Alternative
- **Document Decision**

- The Team
- The Problem Statement
- Alternatives Considered
- Evaluation Outcome
- Preferred Alternative

BROWN AND CALDWELL

Draft Problem Statement

- Form Expert Team
- Describe Service Level Required of System
- Document Problem Statement
- Identify Alternative Solutions
- Eliminate Fatally Flawed Alternatives
- Develop Total Cost-of-Ownership for Each Alternative
- Select Preferred Alternative
- Document Decision

Unable to assure current and future surface water supply quality and quantity requirements

Root Cause:

- Comply with EPA Surface Water Rules 2012
- Risk of contamination of source water
- Risk of watershed fire impacts
- Forest Service Window Opp.
- Aging infrastructure (pipeline, intake)
- Increased human activity in watershed

BROWN AND CALDWELL

Level of Service

Form Expert Team
↓
Describe Service Level Required of System
↓
Document Problem Statement
↓
Identify Alternative Solutions
↓
Eliminate Fatally Flawed Alternatives
↓
Develop Total Cost-of-Ownership for Each Alternative
↓
Select Preferred Alternative
↓
Document Decision

- Maintain City Control
- Maintain dual source of supply
- Maximize existing assets
- Minimize energy consumption
- Minimize cost (capitol, O&M)of supply
- Maintain current water aesthetics
- Meet regulatory requirements
- Provide flexibility for future
- Achieve environmentally sound projects
- Maximize potential for renewable energy
- Maintain ability to provide community safety (serve peak during power outage, fire)

BROWN AND CALDWELL

APPENDIX 2-B

List of Workshop Participants

Bend Water Supply Alternatives Kick-Off Meeting List of Attendees, January 7, 2009	
Attendee	**Company**
Tom Hickmann	City of Bend
Heidi Lansdowne	City of Bend
Patrick Griffiths	City of Bend
Michelle Cheek	Black & Veatch
Kevin Crew	Black Rock Consulting
Jim Doane	Brown and Caldwell
Ed Olson	Brown and Caldwell
Phil Roppo	Brown and Caldwell
David Prull	David Evans and Associates
Adam Sussman	GSI Water Solutions
Karen Swirsky	David Evans and Associates
Pat Van Duser	Black & Veatch
Jack Warburton	Brown and Caldwell
Bob Willis	Brown and Caldwell

APPENDIX 2-C

Net Present Worth Value Calculations for Various Alternatives

Alternative	Construction Costs Power	Construction Costs Water Supply	Capital Costs Total	O & M Costs	Revenue	Net Present Surplus or (Net Present Cost)
Alternative 1 – Do Nothing	$0	$0	$0	$0	$0	0
Alternative 2 – No Upgrades to Spring Supply but Add UV	$0	$2,400,000	$3,200,000	$9,100,000	$0	(12,300,000)
Alternative 3 – Renew Bridge Creek Intake & add filtration	$41,400,000	$27,700,000	$56,100,000	$7,900,000	$87,000,000	23,000,000
Alternative 4 – Intake on Tumalo Creek near Outback Site & add filtration	$0	$30,300,000	$40,500,000	$29,900,000	$0	(70,400,000)
Alternative 5 – Intake and Pump Station on Deschutes River & add filtration +	$0	$40,000,000	$53,500,000	$40,700,000	$0	(94,200,000)
Alternative 6 – Add Well Capacity to Replace Bridge Creek Supply	$0	$21,200,000	$28,400,000	$59,700,000	$0	(88,100,000)
Alternative 7 – Intake on Existing Canal & add filtration ++	$0	$44,300,000	$59,200,000	$45,400,000	$0	(104,600,000)

Alternative 1 - Do Nothing

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ -**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ -**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Power (kWh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286	0.1360	0.1437	0.1519
Power ($)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081	0.081	0.081	0.085
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017	0.018	0.019	0.021
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**	**0.72242**	**0.70138**	**0.68095**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Sum Capital Costs 50 years	**$ -**
Sum O & M Costs 50 years	**$ -**
Sum Revenue 50 years	**$ -**
Sum Net Present Worth 50 years	**$ -**

Alternative 1 - Do Nothing

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ -**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ -**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Power (kWh)	0	0	0	0	0	0	0	0	0	0	0	0	0
Power ($/kWh)	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367	0.2502	0.2645	0.2795	0.2955	0.3123
Power ($)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Power Value PPL Sch 37 ($/kWh)	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133	0.140	0.148	0.157	0.166	0.175
Green Tags ($/kWh) Nov 08	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032	0.034	0.036	0.038	0.040	0.042
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PWF	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs 50 years													
Sum O & M Costs 50 years													
Sum Revenue 50 years													
Sum Net Present Worth 50 years													

Alternative 1 - Do Nothing

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ -**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ -**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Power (kWh)	0	0	0	0	0	0	0	0	0	0	0	0	0
Power ($/kWh)	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421
Power ($)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Power Value PPL Sch 37 ($/kWh)	0.185	0.196	0.207	0.219	0.231	0.244	0.258	0.273	0.288	0.305	0.322	0.341	0.360
Green Tags ($/kWh) Nov 08	0.045	0.047	0.050	0.053	0.056	0.059	0.062	0.066	0.070	0.074	0.078	0.082	0.087
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PWF	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs 50 years													
Sum O & M Costs 50 years													
Sum Revenue 50 years													
Sum Net Present Worth 50 years													

Alternative 1 - Do Nothing

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ -**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ -**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Power (kWh)	0	0	0	0	0	0	0	0	0	0	0
Power ($/kWh)	0.6786	0.7173	0.7582	0.8014	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Power Value PPL Sch 37 ($/kWh)	0.381	0.402	0.425	0.449	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.092	0.097	0.103	0.108	0.115	0.121	0.128	0.135	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PWF	**0.30656**	**0.29763**	**0.28896**	**0.28054**	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum O & M Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 2 - Add UV

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 2,385,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 2,385,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Capital Costs	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800
O and M	$ 100,000	$ 103,000	$ 106,090	$ 109,273	$ 112,551	$ 115,927	$ 119,405	$ 122,987	$ 126,677	$ 130,477	$ 134,392	$ 138,423
Power (kWh)	514,104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286	0.1360
Power ($)	$ 37,992	$ 40,158	$ 42,447	$ 44,866	$ 47,424	$ 50,127	$ 52,984	$ 56,004	$ 59,196	$ 62,571	$ 66,137	$ 69,907
Total Costs	**$ 315,792**	**$ 320,958**	**$ 326,337**	**$ 331,939**	**$ 337,775**	**$ 343,854**	**$ 350,189**	**$ 356,792**	**$ 363,674**	**$ 370,848**	**$ 378,329**	**$ 386,130**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017	0.018
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (315,792)**	**$ (320,958)**	**$ (326,337)**	**$ (331,939)**	**$ (337,775)**	**$ (343,854)**	**$ (350,189)**	**$ (356,792)**	**$ (363,674)**	**$ (370,848)**	**$ (378,329)**	**$ (386,130)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**	**0.72242**
Capital Costs	**$ 177,800**	**$ 172,622**	**$ 167,594**	**$ 162,712**	**$ 157,973**	**$ 153,372**	**$ 148,905**	**$ 144,568**	**$ 140,357**	**$ 136,269**	**$ 132,300**	**$ 128,447**
O & M Costs	**$ 137,992**	**$ 138,988**	**$ 140,010**	**$ 141,059**	**$ 142,135**	**$ 143,240**	**$ 144,373**	**$ 145,536**	**$ 146,730**	**$ 147,955**	**$ 149,212**	**$ 150,502**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (315,792)**	**$ (311,610)**	**$ (307,604)**	**$ (303,771)**	**$ (300,108)**	**$ (296,612)**	**$ (293,278)**	**$ (290,104)**	**$ (287,087)**	**$ (284,224)**	**$ (281,512)**	**$ (278,949)**
Sum Capital Costs	**$ 177,800**	**$ 350,422**	**$ 518,016**	**$ 680,728**	**$ 838,701**	**$ 992,073**	**$ 1,140,978**	**$ 1,285,546**	**$ 1,425,903**	**$ 1,562,172**	**$ 1,694,472**	**$ 1,822,919**
Sum O & M Costs	**$ 137,992**	**$ 276,980**	**$ 416,991**	**$ 558,050**	**$ 700,185**	**$ 843,425**	**$ 987,798**	**$ 1,133,335**	**$ 1,280,065**	**$ 1,428,020**	**$ 1,577,232**	**$ 1,727,734**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (315,792)**	**$ (627,402)**	**$ (935,006)**	**$ (1,238,778)**	**$ (1,538,886)**	**$ (1,835,498)**	**$ (2,128,776)**	**$ (2,418,880)**	**$ (2,705,968)**	**$ (2,990,192)**	**$ (3,271,704)**	**$ (3,550,653)**

Sum Capital Costs 50 years	**$ 3,188,943**
Sum O & M Costs 50 years	**$ 9,074,351**
Sum Revenue 50 years	**$ -**
Sum Net Present Worth 50 years	**$ (12,263,294)**

Alternative 2 - Add UV

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 2,385,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 2,385,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Capital Costs	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800	$ 177,800
O and M	$ 142,576	$ 146,853	$ 151,259	$ 155,797	$ 160,471	$ 165,285	$ 170,243	$ 175,351	$ 180,611	$ 186,029	$ 191,610	$ 197,359
Power (kWh)	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104
Power ($/kWh)	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367	0.2502	0.2645
Power ($)	$ 73,892	$ 78,103	$ 82,555	$ 87,261	$ 92,235	$ 97,492	$ 103,049	$ 108,923	$ 115,132	$ 121,694	$ 128,631	$ 135,963
Total Costs	**$ 394,268**	**$ 402,757**	**$ 411,614**	**$ 420,858**	**$ 430,506**	**$ 440,577**	**$ 451,093**	**$ 462,074**	**$ 473,543**	**$ 485,524**	**$ 498,041**	**$ 511,122**
Power Value PPL Sch 37 ($/kWh)	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133	0.140	0.148
Green Tags ($/kWh) Nov 08	0.019	0.021	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032	0.034	0.036
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (394,268)**	**$ (402,757)**	**$ (411,614)**	**$ (420,858)**	**$ (430,506)**	**$ (440,577)**	**$ (451,093)**	**$ (462,074)**	**$ (473,543)**	**$ (485,524)**	**$ (498,041)**	**$ (511,122)**
PWF	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**	**0.52189**	**0.50669**
Capital Costs	**$ 124,705**	**$ 121,073**	**$ 117,547**	**$ 114,123**	**$ 110,799**	**$ 107,572**	**$ 104,439**	**$ 101,397**	**$ 98,444**	**$ 95,576**	**$ 92,793**	**$ 90,090**
O & M Costs	**$ 151,826**	**$ 153,185**	**$ 154,579**	**$ 156,009**	**$ 157,478**	**$ 158,984**	**$ 160,531**	**$ 162,117**	**$ 163,746**	**$ 165,417**	**$ 167,131**	**$ 168,891**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (276,532)**	**$ (274,258)**	**$ (272,126)**	**$ (270,133)**	**$ (268,277)**	**$ (266,556)**	**$ (264,969)**	**$ (263,514)**	**$ (262,189)**	**$ (260,993)**	**$ (259,924)**	**$ (258,981)**
Sum Capital Costs	**$ 1,947,624**	**$ 2,068,697**	**$ 2,186,244**	**$ 2,300,368**	**$ 2,411,167**	**$ 2,518,739**	**$ 2,623,178**	**$ 2,724,575**	**$ 2,823,018**	**$ 2,918,595**	**$ 3,011,387**	**$ 3,101,477**
Sum O & M Costs	**$ 1,879,560**	**$ 2,032,745**	**$ 2,187,324**	**$ 2,343,333**	**$ 2,500,811**	**$ 2,659,795**	**$ 2,820,326**	**$ 2,982,443**	**$ 3,146,189**	**$ 3,311,605**	**$ 3,478,737**	**$ 3,647,628**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (3,827,185)**	**$ (4,101,442)**	**$ (4,373,568)**	**$ (4,643,701)**	**$ (4,911,978)**	**$ (5,178,534)**	**$ (5,443,504)**	**$ (5,707,018)**	**$ (5,969,207)**	**$ (6,230,200)**	**$ (6,490,124)**	**$ (6,749,105)**
Sum Capital Costs 50 years												
Sum O & M Costs 50 years												
Sum Revenue 50 years												
Sum Net Present Worth 50 years												

Alternative 2 - Add UV

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 2,385,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 2,385,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**
Capital Costs	$ 177,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 203,279	$ 209,378	$ 215,659	$ 222,129	$ 228,793	$ 235,657	$ 242,726	$ 250,008	$ 257,508	$ 265,234	$ 273,191	$ 281,386
Power (kWh)	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104
Power ($/kWh)	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356	0.4604	0.4866	0.5144
Power ($)	$ 143,713	$ 151,904	$ 160,563	$ 169,715	$ 179,389	$ 189,614	$ 200,422	$ 211,846	$ 223,921	$ 236,684	$ 250,175	$ 264,435
Total Costs	**$ 524,792**	**$ 361,282**	**$ 376,222**	**$ 391,844**	**$ 408,181**	**$ 425,270**	**$ 443,148**	**$ 461,854**	**$ 481,429**	**$ 501,918**	**$ 523,366**	**$ 545,822**
Power Value PPL Sch 37 ($/kWh)	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244	0.258	0.273	0.288
Green Tags ($/kWh) Nov 08	0.038	0.040	0.042	0.045	0.047	0.050	0.053	0.056	0.059	0.062	0.066	0.070
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (524,792)**	**$ (361,282)**	**$ (376,222)**	**$ (391,844)**	**$ (408,181)**	**$ (425,270)**	**$ (443,148)**	**$ (461,854)**	**$ (481,429)**	**$ (501,918)**	**$ (523,366)**	**$ (545,822)**
PWF	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**	**0.37703**	**0.36604**	**0.35538**
Capital Costs	**$ 87,466**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 170,697**	**$ 172,550**	**$ 174,452**	**$ 176,404**	**$ 178,407**	**$ 180,462**	**$ 182,571**	**$ 184,736**	**$ 186,957**	**$ 189,236**	**$ 191,575**	**$ 193,976**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (258,163)**	**$ (172,550)**	**$ (174,452)**	**$ (176,404)**	**$ (178,407)**	**$ (180,462)**	**$ (182,571)**	**$ (184,736)**	**$ (186,957)**	**$ (189,236)**	**$ (191,575)**	**$ (193,976)**
Sum Capital Costs	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**
Sum O & M Costs	**$ 3,818,325**	**$ 3,990,875**	**$ 4,165,328**	**$ 4,341,731**	**$ 4,520,138**	**$ 4,700,600**	**$ 4,883,171**	**$ 5,067,906**	**$ 5,254,863**	**$ 5,444,100**	**$ 5,635,675**	**$ 5,829,651**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (7,007,268)**	**$ (7,179,819)**	**$ (7,354,271)**	**$ (7,530,674)**	**$ (7,709,081)**	**$ (7,889,543)**	**$ (8,072,114)**	**$ (8,256,850)**	**$ (8,443,806)**	**$ (8,633,043)**	**$ (8,824,618)**	**$ (9,018,594)**
Sum Capital Costs 50 years												
Sum O & M Costs 50 years												
Sum Revenue 50 years												
Sum Net Present Worth 50 years												

Alternative 2 - Add UV

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 2,385,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 2,385,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**	**2058**	**2059**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 289,828	$ 298,523	$ 307,478	$ 316,703	$ 326,204	$ 335,990	$ 346,070	$ 356,452	$ 367,145	$ 378,160	$ 389,504	$ 401,190
Power (kWh)	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104	514104
Power ($/kWh)	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014	0.8471	0.8954	0.9464	1.0004
Power ($)	$ 279,508	$ 295,440	$ 312,280	$ 330,080	$ 348,895	$ 368,782	$ 389,802	$ 412,021	$ 435,506	$ 460,330	$ 486,569	$ 514,304
Total Costs	**$ 569,336**	**$ 593,963**	**$ 619,759**	**$ 646,783**	**$ 675,099**	**$ 704,772**	**$ 735,872**	**$ 768,473**	**$ 802,652**	**$ 838,490**	**$ 876,074**	**$ 915,493**
Power Value PPL Sch 37 ($/kWh)	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449	0.475	0.502	0.531	0.561
Green Tags ($/kWh) Nov 08	0.074	0.078	0.082	0.087	0.092	0.097	0.103	0.108	0.115	0.121	0.128	0.135
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (569,336)**	**$ (593,963)**	**$ (619,759)**	**$ (646,783)**	**$ (675,099)**	**$ (704,772)**	**$ (735,872)**	**$ (768,473)**	**$ (802,652)**	**$ (838,490)**	**$ (876,074)**	**$ (915,493)**
PWF	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**	**0.27237**	**0.26444**	**0.25674**	**0.24926**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 196,439**	**$ 198,967**	**$ 201,562**	**$ 204,224**	**$ 206,956**	**$ 209,760**	**$ 212,637**	**$ 215,590**	**$ 218,620**	**$ 221,729**	**$ 224,920**	**$ 228,195**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (196,439)**	**$ (198,967)**	**$ (201,562)**	**$ (204,224)**	**$ (206,956)**	**$ (209,760)**	**$ (212,637)**	**$ (215,590)**	**$ (218,620)**	**$ (221,729)**	**$ (224,920)**	**$ (228,195)**
Sum Capital Costs	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**
Sum O & M Costs	**$ 6,026,090**	**$ 6,225,058**	**$ 6,426,620**	**$ 6,630,844**	**$ 6,837,800**	**$ 7,047,560**	**$ 7,260,197**	**$ 7,475,786**	**$ 7,694,406**	**$ 7,916,135**	**$ 8,141,055**	**$ 8,369,250**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (9,215,033)**	**$ (9,414,001)**	**$ (9,615,563)**	**$ (9,819,787)**	**$ (10,026,743)**	**$ (10,236,503)**	**$ (10,449,140)**	**$ (10,664,729)**	**$ (10,883,349)**	**$ (11,105,078)**	**$ (11,329,998)**	**$ (11,558,193)**
Sum Capital Costs 50 years												
Sum O & M Costs 50 years												
Sum Revenue 50 years												
Sum Net Present Worth 50 years												

Alternative 2 - Add UV

Upfront Project Cost

Capital Costs/Power	**$**	**-**
Capital Costs/Water	**$**	**2,385,000**
BETC	**$**	**-**
ETO Grant	**$**	**-**
Adjusted Capital Costs	**$**	**2,385,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -
O and M	$ 413,225	$ 425,622	$ 438,391
Power (kWh)	514104	514104	514104
Power ($/kWh)	1.0574	1.1177	1.1814
Power ($)	$ 543,619	$ 574,605	$ 607,358
Total Costs	**$ 956,844**	**$ 1,000,227**	**$ 1,045,748**
Power Value PPL Sch 37 ($/kWh)	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-
Total Energy (kWh/yr)	-	-	-
Revenue Power Sales	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**
Net	**$ (956,844)**	**$ (1,000,227)**	**$ (1,045,748)**
PWF	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 231,555**	**$ 235,004**	**$ 238,543**
Revenue	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (231,555)**	**$ (235,004)**	**$ (238,543)**
Sum Capital Costs	**$ 3,188,943**	**$ 3,188,943**	**$ 3,188,943**
Sum O & M Costs	**$ 8,600,805**	**$ 8,835,809**	**$ 9,074,351**
Sum Revenue	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (11,789,748)**	**$ (12,024,752)**	**$ (12,263,294)**
Sum Capital Costs 50 years			
Sum O & M Costs 50 years			
Sum Revenue 50 years			
Sum Net Present Worth 50 years			

Alternative 3 - Renew Bridge Creek Intake, add Filtration, and add Hydro Options
BETC at 50% up to $10M, ITC @ 30%, Fed Grants at $300,000 ETO Grant at 10%, full value of green tags, Fed production incentives for 10 years
No BETC for Water Options
Flows Ramped Up
Staged in Flows

Upfront Project Cost

Capital Costs/Power	**$ 41,400,000**
Capital Costs/Water	**$ 27,700,000**
Fed and BETC Grants	**$ 23,020,000**
ETO Grant	**$ 4,140,000**
Adjusted Capital Costs	**$ 41,940,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capital Costs	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600
O and M	$ 125,000	$ 128,750	$ 132,613	$ 136,591	$ 140,689	$ 144,909	$ 149,257	$ 153,734	$ 158,346	$ 163,097	$ 167,990
Power (kWh)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286
Power ($)	$ 14,780	$ 15,622	$ 16,513	$ 17,454	$ 18,449	$ 19,501	$ 20,612	$ 21,787	$ 23,029	$ 24,342	$ 25,729
Total Costs	**$ 3,266,380**	**$ 3,270,972**	**$ 3,275,725**	**$ 3,280,645**	**$ 3,285,738**	**$ 3,291,010**	**$ 3,296,469**	**$ 3,302,121**	**$ 3,307,975**	**$ 3,314,038**	**$ 3,320,318**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.022	0.023	0.025	0.026	0.027	0.029	0.031	0.032	0.034	0.036	0.038
Hydro Production Incentive ($/kWh)	0.044	0.047	0.049	0.052	0.055	0.058	0.061	0.065	0.069	0.072	-
Total Energy (kWh/yr)	5,910,000	11,820,000	11,460,000	11,460,000	11,460,000	11,740,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000
Revenue Power Sales	$ 407,790	$ 817,944	$ 818,244	$ 850,332	$ 881,274	$ 918,068	$ 957,994	$ 855,824	$ 972,418	$ 972,418	$ 972,418
Revenue Green Tag Sales	$ 130,020	$ 274,862	$ 281,681	$ 297,737	$ 314,708	$ 340,773	$ 368,788	$ 389,809	$ 412,028	$ 435,514	$ 460,338
Hydro Production Incentive	$ 260,040	$ 549,725	$ 563,362	$ 595,473	$ 629,415	$ 681,547	$ 737,576	$ 779,618	$ 824,057	$ 871,028	$ -
Total Revenue	**$ 797,850**	**$ 1,642,531**	**$ 1,663,286**	**$ 1,743,542**	**$ 1,825,397**	**$ 1,940,388**	**$ 2,064,359**	**$ 2,025,252**	**$ 2,208,503**	**$ 2,278,960**	**$ 1,432,756**
Net	**$ (2,468,530)**	**$ (1,628,441)**	**$ (1,612,439)**	**$ (1,537,103)**	**$ (1,460,341)**	**$ (1,350,622)**	**$ (1,232,110)**	**$ (1,276,870)**	**$ (1,099,472)**	**$ (1,035,078)**	**$ (1,887,562)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**
Capital Costs	**$ 3,126,600**	**$ 3,035,534**	**$ 2,947,120**	**$ 2,861,282**	**$ 2,777,943**	**$ 2,697,033**	**$ 2,618,478**	**$ 2,542,212**	**$ 2,468,167**	**$ 2,396,278**	**$ 2,326,484**
O & M Costs	**$ 139,780**	**$ 140,167**	**$ 140,565**	**$ 140,973**	**$ 141,392**	**$ 141,821**	**$ 142,262**	**$ 142,715**	**$ 143,179**	**$ 143,656**	**$ 144,145**
Revenue	**$ 797,850**	**$ 1,594,690**	**$ 1,567,807**	**$ 1,595,588**	**$ 1,621,841**	**$ 1,673,796**	**$ 1,728,868**	**$ 1,646,715**	**$ 1,743,413**	**$ 1,746,633**	**$ 1,066,105**
Present Worth 2011	**$ (2,468,530)**	**$ (1,581,011)**	**$ (1,519,878)**	**$ (1,406,667)**	**$ (1,297,494)**	**$ (1,165,058)**	**$ (1,031,873)**	**$ (1,038,212)**	**$ (867,933)**	**$ (793,301)**	**$ (1,404,524)**
Sum Capital Costs	**$ 3,126,600**	**$ 6,162,134**	**$ 9,109,254**	**$ 11,970,536**	**$ 14,748,479**	**$ 17,445,512**	**$ 20,063,990**	**$ 22,606,202**	**$ 25,074,368**	**$ 27,470,647**	**$ 29,797,131**
Sum O & M Costs	**$ 139,780**	**$ 279,947**	**$ 420,512**	**$ 561,486**	**$ 702,877**	**$ 844,699**	**$ 986,961**	**$ 1,129,676**	**$ 1,272,855**	**$ 1,416,511**	**$ 1,560,656**
Sum Revenue	**$ 797,850**	**$ 2,392,540**	**$ 3,960,347**	**$ 5,555,935**	**$ 7,177,776**	**$ 8,851,572**	**$ 10,580,440**	**$ 12,227,155**	**$ 13,970,568**	**$ 15,717,201**	**$ 16,783,306**
Sum Present Worth	**$ (2,468,530)**	**$ (4,049,541)**	**$ (5,569,419)**	**$ (6,976,086)**	**$ (8,273,580)**	**$ (9,438,638)**	**$ (10,470,511)**	**$ (11,508,723)**	**$ (12,376,656)**	**$ (13,169,957)**	**$ (14,574,481)**

Sum Capital Costs 50 years	**$ 56,077,264**
Sum O & M Costs 50 years	**$ 7,921,128**
Sum Revenue 50 years	**$ 87,017,392**
Sum Net Present Worth 50 years	**$ 23,019,000**

Alternative 3 - Renew Bridge Creek Intake, add Filtration, and add Hydro Options
BETC at 50% up to $10M, ITC @ 30%, Fed Grants at $300,000 ETO Grant at 10%, full value of green tags, Fed production incentives for 10 years
No BETC for Water Options
Flows Ramped Up
Staged in Flows

Upfront Project Cost

Capital Costs/Power	**$ 41,400,000**
Capital Costs/Water	**$ 27,700,000**
Fed and BETC Grants	**$ 23,020,000**
ETO Grant	**$ 4,140,000**
Adjusted Capital Costs	**$ 41,940,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Capital Costs	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ 3,126,600
O and M	$ 173,029	$ 178,220	$ 183,567	$ 189,074	$ 194,746	$ 200,588	$ 206,606	$ 212,804	$ 219,188	$ 225,764	$ 232,537
Power (kWh)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Power ($/kWh)	0.1360	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367
Power ($)	$ 27,196	$ 28,746	$ 30,384	$ 32,116	$ 33,947	$ 35,882	$ 37,927	$ 40,089	$ 42,374	$ 44,789	$ 47,342
Total Costs	**$ 3,326,825**	**$ 3,333,566**	**$ 3,340,551**	**$ 3,347,790**	**$ 3,355,293**	**$ 3,363,070**	**$ 3,371,133**	**$ 3,379,493**	**$ 3,388,162**	**$ 3,397,153**	**$ 3,406,479**
Power Value PPL Sch 37 ($/kWh)	0.081	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133
Green Tags ($/kWh) Nov 08	0.040	0.043	0.045	0.048	0.051	0.053	0.056	0.060	0.063	0.067	0.070
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000
Revenue Power Sales	$ 973,620	$ 968,812	$ 1,024,034	$ 1,082,404	$ 1,144,101	$ 1,209,315	$ 1,278,246	$ 1,351,106	$ 1,428,119	$ 1,509,522	$ 1,595,565
Revenue Green Tag Sales	$ 486,577	$ 514,312	$ 543,628	$ 574,615	$ 607,368	$ 641,988	$ 678,581	$ 717,261	$ 758,144	$ 801,359	$ 847,036
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ 1,460,197**	**$ 1,483,124**	**$ 1,567,662**	**$ 1,657,019**	**$ 1,751,469**	**$ 1,851,303**	**$ 1,956,827**	**$ 2,068,367**	**$ 2,186,263**	**$ 2,310,880**	**$ 2,442,601**
Net	**$ (1,866,627)**	**$ (1,850,441)**	**$ (1,772,888)**	**$ (1,690,771)**	**$ (1,603,823)**	**$ (1,511,767)**	**$ (1,414,305)**	**$ (1,311,126)**	**$ (1,201,899)**	**$ (1,086,273)**	**$ (963,878)**
PWF	**0.72242**	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**
Capital Costs	**$ 2,258,722**	**$ 2,192,934**	**$ 2,129,062**	**$ 2,067,051**	**$ 2,006,845**	**$ 1,948,394**	**$ 1,891,644**	**$ 1,836,548**	**$ 1,783,056**	**$ 1,731,123**	**$ 1,680,701**
O & M Costs	**$ 144,647**	**$ 145,162**	**$ 145,690**	**$ 146,233**	**$ 146,789**	**$ 147,360**	**$ 147,946**	**$ 148,548**	**$ 149,165**	**$ 149,799**	**$ 150,449**
Revenue	**$ 1,054,878**	**$ 1,040,234**	**$ 1,067,502**	**$ 1,095,485**	**$ 1,124,202**	**$ 1,153,671**	**$ 1,183,913**	**$ 1,214,947**	**$ 1,246,795**	**$ 1,279,478**	**$ 1,313,018**
Present Worth 2011	**$ (1,348,491)**	**$ (1,297,862)**	**$ (1,207,251)**	**$ (1,117,799)**	**$ (1,029,433)**	**$ (942,083)**	**$ (855,678)**	**$ (770,149)**	**$ (685,426)**	**$ (601,443)**	**$ (518,132)**
Sum Capital Costs	**$ 32,055,853**	**$ 34,248,787**	**$ 36,377,850**	**$ 38,444,901**	**$ 40,451,746**	**$ 42,400,140**	**$ 44,291,784**	**$ 46,128,332**	**$ 47,911,388**	**$ 49,642,511**	**$ 51,323,212**
Sum O & M Costs	**$ 1,705,303**	**$ 1,850,464**	**$ 1,996,155**	**$ 2,142,387**	**$ 2,289,176**	**$ 2,436,537**	**$ 2,584,483**	**$ 2,733,031**	**$ 2,882,197**	**$ 3,031,995**	**$ 3,182,444**
Sum Revenue	**$ 17,838,183**	**$ 18,878,417**	**$ 19,945,919**	**$ 21,041,404**	**$ 22,165,605**	**$ 23,319,276**	**$ 24,503,189**	**$ 25,718,136**	**$ 26,964,932**	**$ 28,244,410**	**$ 29,557,429**
Sum Present Worth	**$ (15,922,972)**	**$ (17,220,835)**	**$ (18,428,085)**	**$ (19,545,884)**	**$ (20,575,317)**	**$ (21,517,400)**	**$ (22,373,078)**	**$ (23,143,227)**	**$ (23,828,653)**	**$ (24,430,096)**	**$ (24,948,228)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 3 - Renew Bridge Creek Intake, add Filtration, and add Hydro Options
BETC at 50% up to $10M, ITC @ 30%, Fed Grants at $300,000 ETO Grant at 10%, full value of green tags, Fed production incentives for 10 years
No BETC for Water Options
Flows Ramped Up
Staged in Flows

Upfront Project Cost

Capital Costs/Power	**$ 41,400,000**
Capital Costs/Water	**$ 27,700,000**
Fed and BETC Grants	**$ 23,020,000**
ETO Grant	**$ 4,140,000**
Adjusted Capital Costs	**$ 41,940,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Capital Costs	$ 3,126,600	$ 3,126,600	$ 3,126,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 239,513	$ 246,698	$ 254,099	$ 261,722	$ 269,574	$ 277,661	$ 285,991	$ 294,571	$ 303,408	$ 312,510	$ 321,885
Power (kWh)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Power ($/kWh)	0.2502	0.2645	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356
Power ($)	$ 50,041	$ 52,893	$ 55,908	$ 59,095	$ 62,463	$ 66,024	$ 69,787	$ 73,765	$ 77,969	$ 82,414	$ 87,111
Total Costs	**$ 3,416,154**	**$ 3,426,191**	**$ 3,436,607**	**$ 320,817**	**$ 332,037**	**$ 343,685**	**$ 355,778**	**$ 368,335**	**$ 381,377**	**$ 394,924**	**$ 408,997**
Power Value PPL Sch 37 ($/kWh)	0.140	0.148	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244
Green Tags ($/kWh) Nov 08	0.074	0.079	0.083	0.088	0.093	0.098	0.104	0.110	0.116	0.123	0.130
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000
Revenue Power Sales	$ 1,686,512	$ 1,782,643	$ 1,884,254	$ 1,991,656	$ 2,105,180	$ 2,225,176	$ 2,352,011	$ 2,486,075	$ 2,627,782	$ 2,777,565	$ 2,935,886
Revenue Green Tag Sales	$ 895,317	$ 946,350	$ 1,000,292	$ 1,057,309	$ 1,117,575	$ 1,181,277	$ 1,248,610	$ 1,319,781	$ 1,395,008	$ 1,474,524	$ 1,558,572
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ 2,581,829**	**$ 2,728,993**	**$ 2,884,546**	**$ 3,048,965**	**$ 3,222,756**	**$ 3,406,453**	**$ 3,600,621**	**$ 3,805,856**	**$ 4,022,790**	**$ 4,252,089**	**$ 4,494,458**
Net	**$ (834,325)**	**$ (697,198)**	**$ (552,061)**	**$ 2,728,148**	**$ 2,890,719**	**$ 3,062,768**	**$ 3,244,843**	**$ 3,437,521**	**$ 3,641,413**	**$ 3,857,165**	**$ 4,085,461**
PWF	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**
Capital Costs	**$ 1,631,749**	**$ 1,584,222**	**$ 1,538,080**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 151,116**	**$ 151,801**	**$ 152,503**	**$ 153,224**	**$ 153,964**	**$ 154,723**	**$ 155,502**	**$ 156,302**	**$ 157,122**	**$ 157,964**	**$ 158,829**
Revenue	**$ 1,347,437**	**$ 1,382,758**	**$ 1,419,005**	**$ 1,456,203**	**$ 1,494,375**	**$ 1,533,548**	**$ 1,573,748**	**$ 1,615,001**	**$ 1,657,336**	**$ 1,700,781**	**$ 1,745,364**
Present Worth 2011	**$ (435,428)**	**$ (353,265)**	**$ (271,578)**	**$ 1,302,979**	**$ 1,340,411**	**$ 1,378,825**	**$ 1,418,245**	**$ 1,458,699**	**$ 1,500,214**	**$ 1,542,817**	**$ 1,586,536**
Sum Capital Costs	**$ 52,954,961**	**$ 54,539,184**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**
Sum O & M Costs	**$ 3,333,560**	**$ 3,485,361**	**$ 3,637,864**	**$ 3,791,088**	**$ 3,945,051**	**$ 4,099,774**	**$ 4,255,277**	**$ 4,411,579**	**$ 4,568,701**	**$ 4,726,665**	**$ 4,885,494**
Sum Revenue	**$ 30,904,866**	**$ 32,287,624**	**$ 33,706,629**	**$ 35,162,832**	**$ 36,657,207**	**$ 38,190,755**	**$ 39,764,502**	**$ 41,379,503**	**$ 43,036,840**	**$ 44,737,621**	**$ 46,482,985**
Sum Present Worth	**$ (25,383,655)**	**$ (25,736,920)**	**$ (26,008,498)**	**$ (24,705,519)**	**$ (23,365,108)**	**$ (21,986,283)**	**$ (20,568,038)**	**$ (19,109,339)**	**$ (17,609,125)**	**$ (16,066,308)**	**$ (14,479,772)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 3 - Renew Bridge Creek Intake, add Filtration, and add Hydro Options
BETC at 50% up to $10M, ITC @ 30%, Fed Grants at $300,000 ETO Grant at 10%, full value of green tags, Fed production incentives for 10 years
No BETC for Water Options
Flows Ramped Up
Staged in Flows

Upfront Project Cost

Capital Costs/Power	**$ 41,400,000**
Capital Costs/Water	**$ 27,700,000**
Fed and BETC Grants	**$ 23,020,000**
ETO Grant	**$ 4,140,000**
Adjusted Capital Costs	**$ 41,940,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 331,542	$ 341,488	$ 351,733	$ 362,285	$ 373,153	$ 384,348	$ 395,878	$ 407,755	$ 419,987	$ 432,587	$ 445,565
Power (kWh)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Power ($/kWh)	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014
Power ($)	$ 92,077	$ 97,325	$ 102,872	$ 108,736	$ 114,934	$ 121,485	$ 128,410	$ 135,729	$ 143,466	$ 151,644	$ 160,287
Total Costs	**$ 423,618**	**$ 438,813**	**$ 454,605**	**$ 471,021**	**$ 488,087**	**$ 505,833**	**$ 524,288**	**$ 543,484**	**$ 563,453**	**$ 584,231**	**$ 605,852**
Power Value PPL Sch 37 ($/kWh)	0.258	0.273	0.288	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449
Green Tags ($/kWh) Nov 08	0.137	0.145	0.153	0.162	0.171	0.181	0.191	0.202	0.214	0.226	0.239
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000
Revenue Power Sales	$ 3,103,232	$ 3,280,116	$ 3,467,083	$ 3,664,707	$ 3,873,595	$ 4,094,390	$ 4,327,770	$ 4,574,453	$ 4,835,197	$ 5,110,803	$ 5,402,119
Revenue Green Tag Sales	$ 1,647,410	$ 1,741,312	$ 1,840,567	$ 1,945,480	$ 2,056,372	$ 2,173,585	$ 2,297,480	$ 2,428,436	$ 2,566,857	$ 2,713,168	$ 2,867,818
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ 4,750,642**	**$ 5,021,429**	**$ 5,307,650**	**$ 5,610,186**	**$ 5,929,967**	**$ 6,267,975**	**$ 6,625,249**	**$ 7,002,889**	**$ 7,402,053**	**$ 7,823,970**	**$ 8,269,937**
Net	**$ 4,327,024**	**$ 4,582,616**	**$ 4,853,045**	**$ 5,139,165**	**$ 5,441,879**	**$ 5,762,142**	**$ 6,100,961**	**$ 6,459,405**	**$ 6,838,600**	**$ 7,239,740**	**$ 7,664,085**
PWF	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 159,715**	**$ 160,625**	**$ 161,559**	**$ 162,517**	**$ 163,501**	**$ 164,510**	**$ 165,546**	**$ 166,609**	**$ 167,699**	**$ 168,819**	**$ 169,967**
Revenue	**$ 1,791,117**	**$ 1,838,068**	**$ 1,886,251**	**$ 1,935,696**	**$ 1,986,438**	**$ 2,038,509**	**$ 2,091,946**	**$ 2,146,783**	**$ 2,203,058**	**$ 2,260,808**	**$ 2,320,072**
Present Worth 2011	**$ 1,631,401**	**$ 1,677,443**	**$ 1,724,692**	**$ 1,773,179**	**$ 1,822,937**	**$ 1,873,999**	**$ 1,926,400**	**$ 1,980,175**	**$ 2,035,359**	**$ 2,091,990**	**$ 2,150,105**
Sum Capital Costs	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**
Sum O & M Costs	**$ 5,045,209**	**$ 5,205,834**	**$ 5,367,394**	**$ 5,529,911**	**$ 5,693,412**	**$ 5,857,922**	**$ 6,023,468**	**$ 6,190,077**	**$ 6,357,776**	**$ 6,526,595**	**$ 6,696,563**
Sum Revenue	**$ 48,274,102**	**$ 50,112,170**	**$ 51,998,421**	**$ 53,934,117**	**$ 55,920,555**	**$ 57,959,064**	**$ 60,051,010**	**$ 62,197,794**	**$ 64,400,852**	**$ 66,661,660**	**$ 68,981,733**
Sum Present Worth	**$ (12,848,371)**	**$ (11,170,928)**	**$ (9,446,236)**	**$ (7,673,057)**	**$ (5,850,121)**	**$ (3,976,122)**	**$ (2,049,721)**	**$ (69,547)**	**$ 1,965,812**	**$ 4,057,802**	**$ 6,207,907**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 3 - Renew Bridge Creek Intake, add Filtration, and add Hydro Options
BETC at 50% up to $10M, ITC @ 30%, Fed Grants at $300,000 ETO Grant at 10%, full value of green tags, Fed production incenti
No BETC for Water Options
Flows Ramped Up
Staged in Flows

Upfront Project Cost

Capital Costs/Power	**$ 41,400,000**
Capital Costs/Water	**$ 27,700,000**
Fed and BETC Grants	**$ 23,020,000**
ETO Grant	**$ 4,140,000**
Adjusted Capital Costs	**$ 41,940,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 458,932	$ 472,699	$ 486,880	$ 501,487	$ 516,531	$ 532,027	$ 547,988
Power (kWh)	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Power ($/kWh)	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ 169,424	$ 179,081	$ 189,288	$ 200,078	$ 211,482	$ 223,537	$ 236,278
Total Costs	**$ 628,355**	**$ 651,780**	**$ 676,169**	**$ 701,565**	**$ 728,014**	**$ 755,564**	**$ 784,267**
Power Value PPL Sch 37 ($/kWh)	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.252	0.267	0.282	0.298	0.315	0.333	0.352
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-
Total Energy (kWh/yr)	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000	12,020,000
Revenue Power Sales	$ 5,710,039	$ 6,035,512	$ 6,379,536	$ 6,743,169	$ 7,127,530	$ 7,533,799	$ 7,963,226
Revenue Green Tag Sales	$ 3,031,284	$ 3,204,067	$ 3,386,699	$ 3,579,741	$ 3,783,786	$ 3,999,462	$ 4,227,431
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ 8,741,323**	**$ 9,239,579**	**$ 9,766,235**	**$ 10,322,910**	**$ 10,911,316**	**$ 11,533,261**	**$ 12,190,657**
Net	**$ 8,112,968**	**$ 8,587,798**	**$ 9,090,066**	**$ 9,621,345**	**$ 10,183,302**	**$ 10,777,697**	**$ 11,406,390**
PWF	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 171,146**	**$ 172,356**	**$ 173,597**	**$ 174,871**	**$ 176,178**	**$ 177,520**	**$ 178,897**
Revenue	**$ 2,380,890**	**$ 2,443,301**	**$ 2,507,349**	**$ 2,573,076**	**$ 2,640,525**	**$ 2,709,743**	**$ 2,780,775**
Present Worth 2011	**$ 2,209,744**	**$ 2,270,946**	**$ 2,333,752**	**$ 2,398,205**	**$ 2,464,347**	**$ 2,532,223**	**$ 2,601,878**
Sum Capital Costs	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**	**$ 56,077,264**
Sum O & M Costs	**$ 6,867,709**	**$ 7,040,065**	**$ 7,213,662**	**$ 7,388,533**	**$ 7,564,711**	**$ 7,742,232**	**$ 7,921,128**
Sum Revenue	**$ 71,362,622**	**$ 73,805,924**	**$ 76,313,273**	**$ 78,886,349**	**$ 81,526,874**	**$ 84,236,617**	**$ 87,017,392**
Sum Present Worth	**$ 8,417,650**	**$ 10,688,596**	**$ 13,022,348**	**$ 15,420,552**	**$ 17,884,899**	**$ 20,417,122**	**$ 23,019,000**
Sum Capital Costs 50 years							
Sum O & M Costs 50 years							
Sum Revenue 50 years							
Sum Net Present Worth 50 years							

Alternative 4 - New intake on Tumalo Creek and add filtration

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 30,259,178**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 30,259,178**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capital Costs	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802
O and M	$ 125,000	$ 128,750	$ 132,613	$ 136,591	$ 140,689	$ 144,909	$ 149,257	$ 153,734	$ 158,346	$ 163,097	$ 167,990
Power (kWh)	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286
Power ($)	$ 225,360	$ 238,205	$ 251,783	$ 266,135	$ 281,304	$ 297,339	$ 314,287	$ 332,201	$ 351,137	$ 371,152	$ 392,307
Total Costs	**$ 2,606,162**	**$ 2,622,758**	**$ 2,640,198**	**$ 2,658,528**	**$ 2,677,795**	**$ 2,698,050**	**$ 2,719,346**	**$ 2,741,738**	**$ 2,765,285**	**$ 2,790,051**	**$ 2,816,099**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,606,162)**	**$ (2,622,758)**	**$ (2,640,198)**	**$ (2,658,528)**	**$ (2,677,795)**	**$ (2,698,050)**	**$ (2,719,346)**	**$ (2,741,738)**	**$ (2,765,285)**	**$ (2,790,051)**	**$ (2,816,099)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**
Capital Costs	**$ 2,255,802**	**$ 2,190,099**	**$ 2,126,310**	**$ 2,064,378**	**$ 2,004,251**	**$ 1,945,875**	**$ 1,889,199**	**$ 1,834,174**	**$ 1,780,751**	**$ 1,728,884**	**$ 1,678,529**
O & M Costs	**$ 350,360**	**$ 356,267**	**$ 362,330**	**$ 368,551**	**$ 374,935**	**$ 381,487**	**$ 388,211**	**$ 395,110**	**$ 402,191**	**$ 409,457**	**$ 416,914**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,606,162)**	**$ (2,546,367)**	**$ (2,488,640)**	**$ (2,432,929)**	**$ (2,379,186)**	**$ (2,327,362)**	**$ (2,277,409)**	**$ (2,229,284)**	**$ (2,182,942)**	**$ (2,138,341)**	**$ (2,095,442)**
Sum Capital Costs	**$ 2,255,802**	**$ 4,445,901**	**$ 6,572,211**	**$ 8,636,590**	**$ 10,640,840**	**$ 12,586,715**	**$ 14,475,914**	**$ 16,310,087**	**$ 18,090,839**	**$ 19,819,723**	**$ 21,498,252**
Sum O & M Costs	**$ 350,360**	**$ 706,627**	**$ 1,068,957**	**$ 1,437,508**	**$ 1,812,443**	**$ 2,193,930**	**$ 2,582,141**	**$ 2,977,251**	**$ 3,379,442**	**$ 3,788,899**	**$ 4,205,812**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (2,606,162)**	**$ (5,152,529)**	**$ (7,641,168)**	**$ (10,074,098)**	**$ (12,453,284)**	**$ (14,780,646)**	**$ (17,058,055)**	**$ (19,287,339)**	**$ (21,470,280)**	**$ (23,608,622)**	**$ (25,704,064)**

Sum Capital Costs 50 years	**$ 40,459,034**
Sum O & M Costs 50 years	**$ 29,949,784**
Sum Revenue 50 years	**$ -**
Sum Net Present Worth 50 years	**$ (70,408,818)**

Alternative 4 - New intake on Tumalo Creek and add filtration

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 30,259,178**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 30,259,178**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Capital Costs	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ 2,255,802
O and M	$ 173,029	$ 178,220	$ 183,567	$ 189,074	$ 194,746	$ 200,588	$ 206,606	$ 212,804	$ 219,188	$ 225,764	$ 232,537
Power (kWh)	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525
Power ($/kWh)	0.1360	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367
Power ($)	$ 414,669	$ 438,305	$ 463,288	$ 489,696	$ 517,609	$ 547,112	$ 578,298	$ 611,261	$ 646,102	$ 682,930	$ 721,857
Total Costs	**$ 2,843,500**	**$ 2,872,327**	**$ 2,902,657**	**$ 2,934,572**	**$ 2,968,157**	**$ 3,003,503**	**$ 3,040,706**	**$ 3,079,867**	**$ 3,121,093**	**$ 3,164,496**	**$ 3,210,196**
Power Value PPL Sch 37 ($/kWh)	0.081	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133
Green Tags ($/kWh) Nov 08	0.018	0.019	0.021	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,843,500)**	**$ (2,872,327)**	**$ (2,902,657)**	**$ (2,934,572)**	**$ (2,968,157)**	**$ (3,003,503)**	**$ (3,040,706)**	**$ (3,079,867)**	**$ (3,121,093)**	**$ (3,164,496)**	**$ (3,210,196)**
PWF	**0.72242**	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**
Capital Costs	**$ 1,629,639**	**$ 1,582,174**	**$ 1,536,091**	**$ 1,491,351**	**$ 1,447,914**	**$ 1,405,741**	**$ 1,364,797**	**$ 1,325,046**	**$ 1,286,452**	**$ 1,248,983**	**$ 1,212,605**
O & M Costs	**$ 424,566**	**$ 432,418**	**$ 440,477**	**$ 448,747**	**$ 457,233**	**$ 465,942**	**$ 474,880**	**$ 484,051**	**$ 493,463**	**$ 503,122**	**$ 513,034**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,054,205)**	**$ (2,014,593)**	**$ (1,976,568)**	**$ (1,940,098)**	**$ (1,905,147)**	**$ (1,871,684)**	**$ (1,839,677)**	**$ (1,809,097)**	**$ (1,779,916)**	**$ (1,752,105)**	**$ (1,725,639)**
Sum Capital Costs	**$ 23,127,891**	**$ 24,710,065**	**$ 26,246,157**	**$ 27,737,508**	**$ 29,185,421**	**$ 30,591,162**	**$ 31,955,960**	**$ 33,281,006**	**$ 34,567,458**	**$ 35,816,441**	**$ 37,029,046**
Sum O & M Costs	**$ 4,630,378**	**$ 5,062,796**	**$ 5,503,273**	**$ 5,952,020**	**$ 6,409,253**	**$ 6,875,195**	**$ 7,350,075**	**$ 7,834,126**	**$ 8,327,589**	**$ 8,830,711**	**$ 9,343,745**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (27,758,269)**	**$ (29,772,862)**	**$ (31,749,430)**	**$ (33,689,528)**	**$ (35,594,674)**	**$ (37,466,358)**	**$ (39,306,035)**	**$ (41,115,132)**	**$ (42,895,048)**	**$ (44,647,153)**	**$ (46,372,791)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 4 - New intake on Tumalo Creek and add filtration

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 30,259,178**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 30,259,178**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Capital Costs	$ 2,255,802	$ 2,255,802	$ 2,255,802	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 239,513	$ 246,698	$ 254,099	$ 261,722	$ 269,574	$ 277,661	$ 285,991	$ 294,571	$ 303,408	$ 312,510	$ 321,885
Power (kWh)	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525
Power ($/kWh)	0.2502	0.2645	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356
Power ($)	$ 763,003	$ 806,494	$ 852,465	$ 901,055	$ 952,415	$ 1,006,703	$ 1,064,085	$ 1,124,738	$ 1,188,848	$ 1,256,612	$ 1,328,239
Total Costs	**$ 3,258,318**	**$ 3,308,995**	**$ 3,362,366**	**$ 1,162,777**	**$ 1,221,989**	**$ 1,284,364**	**$ 1,350,076**	**$ 1,419,308**	**$ 1,492,256**	**$ 1,569,122**	**$ 1,650,124**
Power Value PPL Sch 37 ($/kWh)	0.140	0.148	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244
Green Tags ($/kWh) Nov 08	0.034	0.036	0.038	0.040	0.042	0.045	0.047	0.050	0.053	0.056	0.059
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,258,318)**	**$ (3,308,995)**	**$ (3,362,366)**	**$ (1,162,777)**	**$ (1,221,989)**	**$ (1,284,364)**	**$ (1,350,076)**	**$ (1,419,308)**	**$ (1,492,256)**	**$ (1,569,122)**	**$ (1,650,124)**
PWF	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**
Capital Costs	**$ 1,177,286**	**$ 1,142,996**	**$ 1,109,705**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 523,206**	**$ 533,644**	**$ 544,356**	**$ 555,349**	**$ 566,630**	**$ 578,207**	**$ 590,087**	**$ 602,278**	**$ 614,790**	**$ 627,629**	**$ 640,804**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,700,492)**	**$ (1,676,640)**	**$ (1,654,061)**	**$ (555,349)**	**$ (566,630)**	**$ (578,207)**	**$ (590,087)**	**$ (602,278)**	**$ (614,790)**	**$ (627,629)**	**$ (640,804)**
Sum Capital Costs	**$ 38,206,332**	**$ 39,349,328**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**
Sum O & M Costs	**$ 9,866,951**	**$ 10,400,595**	**$ 10,944,951**	**$ 11,500,300**	**$ 12,066,930**	**$ 12,645,136**	**$ 13,235,223**	**$ 13,837,502**	**$ 14,452,291**	**$ 15,079,920**	**$ 15,720,724**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (48,073,283)**	**$ (49,749,923)**	**$ (51,403,985)**	**$ (51,959,334)**	**$ (52,525,963)**	**$ (53,104,170)**	**$ (53,694,257)**	**$ (54,296,535)**	**$ (54,911,325)**	**$ (55,538,953)**	**$ (56,179,758)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 4 - New intake on Tumalo Creek and add filtration

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 30,259,178**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 30,259,178**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 331,542	$ 341,488	$ 351,733	$ 362,285	$ 373,153	$ 384,348	$ 395,878	$ 407,755	$ 419,987	$ 432,587	$ 445,565
Power (kWh)	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525
Power ($/kWh)	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014
Power ($)	$ 1,403,949	$ 1,483,974	$ 1,568,560	$ 1,657,968	$ 1,752,472	$ 1,852,363	$ 1,957,948	$ 2,069,551	$ 2,187,515	$ 2,312,204	$ 2,443,999
Total Costs	**$ 1,735,491**	**$ 1,825,462**	**$ 1,920,293**	**$ 2,020,253**	**$ 2,125,626**	**$ 2,236,711**	**$ 2,353,826**	**$ 2,477,306**	**$ 2,607,503**	**$ 2,744,791**	**$ 2,889,564**
Power Value PPL Sch 37 ($/kWh)	0.258	0.273	0.288	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449
Green Tags ($/kWh) Nov 08	0.062	0.066	0.070	0.074	0.078	0.082	0.087	0.092	0.097	0.103	0.108
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (1,735,491)**	**$ (1,825,462)**	**$ (1,920,293)**	**$ (2,020,253)**	**$ (2,125,626)**	**$ (2,236,711)**	**$ (2,353,826)**	**$ (2,477,306)**	**$ (2,607,503)**	**$ (2,744,791)**	**$ (2,889,564)**
PWF	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 654,325**	**$ 668,201**	**$ 682,440**	**$ 697,053**	**$ 712,048**	**$ 727,437**	**$ 743,229**	**$ 759,435**	**$ 776,066**	**$ 793,133**	**$ 810,647**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (654,325)**	**$ (668,201)**	**$ (682,440)**	**$ (697,053)**	**$ (712,048)**	**$ (727,437)**	**$ (743,229)**	**$ (759,435)**	**$ (776,066)**	**$ (793,133)**	**$ (810,647)**
Sum Capital Costs	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**
Sum O & M Costs	**$ 16,375,050**	**$ 17,043,251**	**$ 17,725,691**	**$ 18,422,744**	**$ 19,134,792**	**$ 19,862,229**	**$ 20,605,458**	**$ 21,364,893**	**$ 22,140,959**	**$ 22,934,091**	**$ 23,744,738**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (56,834,083)**	**$ (57,502,284)**	**$ (58,184,725)**	**$ (58,881,777)**	**$ (59,593,826)**	**$ (60,321,263)**	**$ (61,064,492)**	**$ (61,823,927)**	**$ (62,599,992)**	**$ (63,393,125)**	**$ (64,203,772)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 4 - New intake on Tumalo Creek and add filtration

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 30,259,178**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 30,259,178**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 458,932	$ 472,699	$ 486,880	$ 501,487	$ 516,531	$ 532,027	$ 547,988
Power (kWh)	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525	3,049,525
Power ($/kWh)	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ 2,583,307	$ 2,730,556	$ 2,886,198	$ 3,050,711	$ 3,224,601	$ 3,408,404	$ 3,602,683
Total Costs	**$ 3,042,239**	**$ 3,203,255**	**$ 3,373,078**	**$ 3,552,198**	**$ 3,741,133**	**$ 3,940,431**	**$ 4,150,671**
Power Value PPL Sch 37 ($/kWh)	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.115	0.121	0.128	0.135	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,042,239)**	**$ (3,203,255)**	**$ (3,373,078)**	**$ (3,552,198)**	**$ (3,741,133)**	**$ (3,940,431)**	**$ (4,150,671)**
PWF	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 828,620**	**$ 847,064**	**$ 865,992**	**$ 885,416**	**$ 905,350**	**$ 925,805**	**$ 946,797**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (828,620)**	**$ (847,064)**	**$ (865,992)**	**$ (885,416)**	**$ (905,350)**	**$ (925,805)**	**$ (946,797)**
Sum Capital Costs	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**	**$ 40,459,034**
Sum O & M Costs	**$ 24,573,358**	**$ 25,420,423**	**$ 26,286,415**	**$ 27,171,831**	**$ 28,077,181**	**$ 29,002,986**	**$ 29,949,784**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (65,032,392)**	**$ (65,879,456)**	**$ (66,745,449)**	**$ (67,630,865)**	**$ (68,536,215)**	**$ (69,462,020)**	**$ (70,408,818)**
Sum Capital Costs 50 years							
Sum O & M Costs 50 years							
Sum Revenue 50 years							
Sum Net Present Worth 50 years							

Alternative 5 - New Intake on Deschutes River, pump station, and filtration plus added treatment

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 40,012,347**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 40,012,347**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capital Costs	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895
O and M	$ 125,000	$ 128,750	$ 132,613	$ 136,591	$ 140,689	$ 144,909	$ 149,257	$ 153,734	$ 158,346	$ 163,097	$ 167,990
Power (kWh)	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286
Power ($)	$ 328,103	$ 346,804	$ 366,572	$ 387,467	$ 409,552	$ 432,897	$ 457,572	$ 483,654	$ 511,222	$ 540,362	$ 571,162
Total Costs	**$ 3,435,997**	**$ 3,458,449**	**$ 3,482,079**	**$ 3,506,952**	**$ 3,533,136**	**$ 3,560,701**	**$ 3,589,723**	**$ 3,620,283**	**$ 3,652,463**	**$ 3,686,353**	**$ 3,722,046**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,435,997)**	**$ (3,458,449)**	**$ (3,482,079)**	**$ (3,506,952)**	**$ (3,533,136)**	**$ (3,560,701)**	**$ (3,589,723)**	**$ (3,620,283)**	**$ (3,652,463)**	**$ (3,686,353)**	**$ (3,722,046)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**
Capital Costs	**$ 2,982,895**	**$ 2,896,014**	**$ 2,811,664**	**$ 2,729,771**	**$ 2,650,263**	**$ 2,573,071**	**$ 2,498,127**	**$ 2,425,366**	**$ 2,354,725**	**$ 2,286,140**	**$ 2,219,554**
O & M Costs	**$ 453,103**	**$ 461,703**	**$ 470,529**	**$ 479,587**	**$ 488,882**	**$ 498,421**	**$ 508,209**	**$ 518,255**	**$ 528,563**	**$ 539,142**	**$ 549,998**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (3,435,997)**	**$ (3,357,717)**	**$ (3,282,194)**	**$ (3,209,358)**	**$ (3,139,145)**	**$ (3,071,492)**	**$ (3,006,337)**	**$ (2,943,621)**	**$ (2,883,288)**	**$ (2,825,283)**	**$ (2,769,552)**
Sum Capital Costs	**$ 2,982,895**	**$ 5,878,909**	**$ 8,690,573**	**$ 11,420,344**	**$ 14,070,607**	**$ 16,643,678**	**$ 19,141,806**	**$ 21,567,172**	**$ 23,921,897**	**$ 26,208,037**	**$ 28,427,591**
Sum O & M Costs	**$ 453,103**	**$ 914,806**	**$ 1,385,335**	**$ 1,864,922**	**$ 2,353,804**	**$ 2,852,225**	**$ 3,360,435**	**$ 3,878,689**	**$ 4,407,253**	**$ 4,946,395**	**$ 5,496,393**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (3,435,997)**	**$ (6,793,715)**	**$ (10,075,908)**	**$ (13,285,267)**	**$ (16,424,412)**	**$ (19,495,904)**	**$ (22,502,240)**	**$ (25,445,861)**	**$ (28,329,149)**	**$ (31,154,432)**	**$ (33,923,984)**
Sum Capital Costs 50 years	**$ 53,499,832**										
Sum O & M Costs 50 years	**$ 40,697,640**										
Sum Revenue 50 years	**$ -**										
Sum Net Present Worth 50 years	**$ (94,197,472)**										

Alternative 5 - New Intake on Deschutes River, pump station, and filtration plus added treatment

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 40,012,347**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 40,012,347**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Capital Costs	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ 2,982,895
O and M	$ 173,029	$ 178,220	$ 183,567	$ 189,074	$ 194,746	$ 200,588	$ 206,606	$ 212,804	$ 219,188	$ 225,764	$ 232,537
Power (kWh)	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818
Power ($/kWh)	0.1360	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367
Power ($)	$ 603,718	$ 638,130	$ 674,504	$ 712,951	$ 753,589	$ 796,543	$ 841,946	$ 889,937	$ 940,664	$ 994,281	$ 1,050,956
Total Costs	**$ 3,759,642**	**$ 3,799,245**	**$ 3,840,965**	**$ 3,884,919**	**$ 3,931,229**	**$ 3,980,026**	**$ 4,031,447**	**$ 4,085,636**	**$ 4,142,747**	**$ 4,202,940**	**$ 4,266,387**
Power Value PPL Sch 37 ($/kWh)	0.081	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133
Green Tags ($/kWh) Nov 08	0.018	0.019	0.021	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,759,642)**	**$ (3,799,245)**	**$ (3,840,965)**	**$ (3,884,919)**	**$ (3,931,229)**	**$ (3,980,026)**	**$ (4,031,447)**	**$ (4,085,636)**	**$ (4,142,747)**	**$ (4,202,940)**	**$ (4,266,387)**
PWF	**0.72242**	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**
Capital Costs	**$ 2,154,907**	**$ 2,092,142**	**$ 2,031,206**	**$ 1,972,045**	**$ 1,914,607**	**$ 1,858,841**	**$ 1,804,700**	**$ 1,752,136**	**$ 1,701,103**	**$ 1,651,556**	**$ 1,603,453**
O & M Costs	**$ 561,139**	**$ 572,572**	**$ 584,304**	**$ 596,344**	**$ 608,700**	**$ 621,379**	**$ 634,391**	**$ 647,744**	**$ 661,447**	**$ 675,510**	**$ 689,940**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,716,046)**	**$ (2,664,714)**	**$ (2,615,510)**	**$ (2,568,389)**	**$ (2,523,306)**	**$ (2,480,221)**	**$ (2,439,092)**	**$ (2,399,881)**	**$ (2,362,550)**	**$ (2,327,066)**	**$ (2,293,393)**
Sum Capital Costs	**$ 30,582,497**	**$ 32,674,639**	**$ 34,705,845**	**$ 36,677,890**	**$ 38,592,497**	**$ 40,451,338**	**$ 42,256,038**	**$ 44,008,175**	**$ 45,709,278**	**$ 47,360,834**	**$ 48,964,287**
Sum O & M Costs	**$ 6,057,532**	**$ 6,630,104**	**$ 7,214,408**	**$ 7,810,753**	**$ 8,419,453**	**$ 9,040,832**	**$ 9,675,224**	**$ 10,322,968**	**$ 10,984,415**	**$ 11,659,925**	**$ 12,349,865**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (36,640,029)**	**$ (39,304,744)**	**$ (41,920,254)**	**$ (44,488,643)**	**$ (47,011,949)**	**$ (49,492,170)**	**$ (51,931,262)**	**$ (54,331,142)**	**$ (56,693,693)**	**$ (59,020,759)**	**$ (61,314,152)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 5 - New Intake on Deschutes River, pump station, and filtration plus added treatment

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 40,012,347**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 40,012,347**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Capital Costs	$ 2,982,895	$ 2,982,895	$ 2,982,895	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 239,513	$ 246,698	$ 254,099	$ 261,722	$ 269,574	$ 277,661	$ 285,991	$ 294,571	$ 303,408	$ 312,510	$ 321,885
Power (kWh)	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818
Power ($/kWh)	0.2502	0.2645	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356
Power ($)	$ 1,110,860	$ 1,174,179	$ 1,241,107	$ 1,311,850	$ 1,386,626	$ 1,465,663	$ 1,549,206	$ 1,637,511	$ 1,730,849	$ 1,829,508	$ 1,933,790
Total Costs	**$ 4,333,268**	**$ 4,403,772**	**$ 4,478,101**	**$ 1,573,573**	**$ 1,656,200**	**$ 1,743,325**	**$ 1,835,197**	**$ 1,932,082**	**$ 2,034,257**	**$ 2,142,018**	**$ 2,255,675**
Power Value PPL Sch 37 ($/kWh)	0.140	0.148	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244
Green Tags ($/kWh) Nov 08	0.034	0.036	0.038	0.040	0.042	0.045	0.047	0.050	0.053	0.056	0.059
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (4,333,268)**	**$ (4,403,772)**	**$ (4,478,101)**	**$ (1,573,573)**	**$ (1,656,200)**	**$ (1,743,325)**	**$ (1,835,197)**	**$ (1,932,082)**	**$ (2,034,257)**	**$ (2,142,018)**	**$ (2,255,675)**
PWF	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**
Capital Costs	**$ 1,556,750**	**$ 1,511,408**	**$ 1,467,386**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 704,750**	**$ 719,947**	**$ 735,543**	**$ 751,547**	**$ 767,971**	**$ 784,826**	**$ 802,122**	**$ 819,872**	**$ 838,087**	**$ 856,780**	**$ 875,962**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,261,500)**	**$ (2,231,355)**	**$ (2,202,929)**	**$ (751,547)**	**$ (767,971)**	**$ (784,826)**	**$ (802,122)**	**$ (819,872)**	**$ (838,087)**	**$ (856,780)**	**$ (875,962)**
Sum Capital Costs	**$ 50,521,037**	**$ 52,032,445**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**
Sum O & M Costs	**$ 13,054,615**	**$ 13,774,561**	**$ 14,510,104**	**$ 15,261,651**	**$ 16,029,622**	**$ 16,814,448**	**$ 17,616,570**	**$ 18,436,442**	**$ 19,274,529**	**$ 20,131,308**	**$ 21,007,270**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (63,575,652)**	**$ (65,807,007)**	**$ (68,009,936)**	**$ (68,761,483)**	**$ (69,529,454)**	**$ (70,314,279)**	**$ (71,116,402)**	**$ (71,936,273)**	**$ (72,774,360)**	**$ (73,631,140)**	**$ (74,507,102)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 5 - New Intake on Deschutes River, pump station, and filtration plus added treatment

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 40,012,347**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 40,012,347**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 331,542	$ 341,488	$ 351,733	$ 362,285	$ 373,153	$ 384,348	$ 395,878	$ 407,755	$ 419,987	$ 432,587	$ 445,565
Power (kWh)	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818
Power ($/kWh)	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014
Power ($)	$ 2,044,016	$ 2,160,524	$ 2,283,674	$ 2,413,844	$ 2,551,433	$ 2,696,864	$ 2,850,586	$ 3,013,069	$ 3,184,814	$ 3,366,348	$ 3,558,230
Total Costs	**$ 2,375,557**	**$ 2,502,013**	**$ 2,635,407**	**$ 2,776,129**	**$ 2,924,586**	**$ 3,081,212**	**$ 3,246,464**	**$ 3,420,824**	**$ 3,604,801**	**$ 3,798,935**	**$ 4,003,795**
Power Value PPL Sch 37 ($/kWh)	0.258	0.273	0.288	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449
Green Tags ($/kWh) Nov 08	0.062	0.066	0.070	0.074	0.078	0.082	0.087	0.092	0.097	0.103	0.108
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,375,557)**	**$ (2,502,013)**	**$ (2,635,407)**	**$ (2,776,129)**	**$ (2,924,586)**	**$ (3,081,212)**	**$ (3,246,464)**	**$ (3,420,824)**	**$ (3,604,801)**	**$ (3,798,935)**	**$ (4,003,795)**
PWF	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 895,647**	**$ 915,849**	**$ 936,580**	**$ 957,854**	**$ 979,686**	**$ 1,002,091**	**$ 1,025,083**	**$ 1,048,677**	**$ 1,072,890**	**$ 1,097,737**	**$ 1,123,236**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (895,647)**	**$ (915,849)**	**$ (936,580)**	**$ (957,854)**	**$ (979,686)**	**$ (1,002,091)**	**$ (1,025,083)**	**$ (1,048,677)**	**$ (1,072,890)**	**$ (1,097,737)**	**$ (1,123,236)**
Sum Capital Costs	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**
Sum O & M Costs	**$ 21,902,918**	**$ 22,818,767**	**$ 23,755,347**	**$ 24,713,201**	**$ 25,692,887**	**$ 26,694,978**	**$ 27,720,061**	**$ 28,768,738**	**$ 29,841,628**	**$ 30,939,365**	**$ 32,062,601**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (75,402,749)**	**$ (76,318,598)**	**$ (77,255,178)**	**$ (78,213,033)**	**$ (79,192,719)**	**$ (80,194,810)**	**$ (81,219,893)**	**$ (82,268,569)**	**$ (83,341,459)**	**$ (84,439,197)**	**$ (85,562,433)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 5 - New Intake on Deschutes River, pump station, and filtration plus added treatment

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 40,012,347**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 40,012,347**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 458,932	$ 472,699	$ 486,880	$ 501,487	$ 516,531	$ 532,027	$ 547,988
Power (kWh)	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818	4,439,818
Power ($/kWh)	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ 3,761,049	$ 3,975,429	$ 4,202,029	$ 4,441,544	$ 4,694,712	$ 4,962,311	$ 5,245,163
Total Costs	**$ 4,219,981**	**$ 4,448,129**	**$ 4,688,909**	**$ 4,943,031**	**$ 5,211,244**	**$ 5,494,338**	**$ 5,793,151**
Power Value PPL Sch 37 ($/kWh)	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.115	0.121	0.128	0.135	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (4,219,981)**	**$ (4,448,129)**	**$ (4,688,909)**	**$ (4,943,031)**	**$ (5,211,244)**	**$ (5,494,338)**	**$ (5,793,151)**
PWF	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,149,404**	**$ 1,176,257**	**$ 1,203,814**	**$ 1,232,094**	**$ 1,261,115**	**$ 1,290,896**	**$ 1,321,459**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,149,404)**	**$ (1,176,257)**	**$ (1,203,814)**	**$ (1,232,094)**	**$ (1,261,115)**	**$ (1,290,896)**	**$ (1,321,459)**
Sum Capital Costs	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**	**$ 53,499,832**
Sum O & M Costs	**$ 33,212,005**	**$ 34,388,262**	**$ 35,592,076**	**$ 36,824,170**	**$ 38,085,285**	**$ 39,376,182**	**$ 40,697,640**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (86,711,837)**	**$ (87,888,094)**	**$ (89,091,908)**	**$ (90,324,002)**	**$ (91,585,117)**	**$ (92,876,013)**	**$ (94,197,472)**
Sum Capital Costs 50 years							
Sum O & M Costs 50 years							
Sum Revenue 50 years							
Sum Net Present Worth 50 years							

Alternative 6 - Increase Wells to replace Bridge Creek Supply and abandon Bridge Creek System

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 21,225,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 21,225,000**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capital Costs	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310
O and M	$ 112,000	$ 115,360	$ 118,821	$ 122,385	$ 126,057	$ 129,839	$ 133,734	$ 137,746	$ 141,878	$ 146,135	$ 150,519
Power (kWh)	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286
Power ($)	$ 515,870	$ 545,275	$ 576,356	$ 609,208	$ 643,933	$ 680,637	$ 719,433	$ 760,441	$ 803,786	$ 849,602	$ 898,029
Total Costs	**$ 2,210,180**	**$ 2,242,945**	**$ 2,277,487**	**$ 2,313,903**	**$ 2,352,300**	**$ 2,392,786**	**$ 2,435,477**	**$ 2,480,497**	**$ 2,527,974**	**$ 2,578,047**	**$ 2,630,858**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,210,180)**	**$ (2,242,945)**	**$ (2,277,487)**	**$ (2,313,903)**	**$ (2,352,300)**	**$ (2,392,786)**	**$ (2,435,477)**	**$ (2,480,497)**	**$ (2,527,974)**	**$ (2,578,047)**	**$ (2,630,858)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**
Capital Costs	**$ 1,582,310**	**$ 1,536,223**	**$ 1,491,479**	**$ 1,448,038**	**$ 1,405,862**	**$ 1,364,915**	**$ 1,325,160**	**$ 1,286,563**	**$ 1,249,090**	**$ 1,212,709**	**$ 1,177,387**
O & M Costs	**$ 627,870**	**$ 641,393**	**$ 655,271**	**$ 669,512**	**$ 684,126**	**$ 699,123**	**$ 714,514**	**$ 730,308**	**$ 746,516**	**$ 763,149**	**$ 780,218**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,210,180)**	**$ (2,177,617)**	**$ (2,146,749)**	**$ (2,117,549)**	**$ (2,089,988)**	**$ (2,064,038)**	**$ (2,039,674)**	**$ (2,016,871)**	**$ (1,995,606)**	**$ (1,975,858)**	**$ (1,957,605)**
Sum Capital Costs	**$ 1,582,310**	**$ 3,118,533**	**$ 4,610,012**	**$ 6,058,050**	**$ 7,463,912**	**$ 8,828,827**	**$ 10,153,986**	**$ 11,440,549**	**$ 12,689,639**	**$ 13,902,348**	**$ 15,079,735**
Sum O & M Costs	**$ 627,870**	**$ 1,269,264**	**$ 1,924,534**	**$ 2,594,046**	**$ 3,278,172**	**$ 3,977,295**	**$ 4,691,809**	**$ 5,422,118**	**$ 6,168,634**	**$ 6,931,783**	**$ 7,712,001**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (2,210,180)**	**$ (4,387,797)**	**$ (6,534,547)**	**$ (8,652,096)**	**$ (10,742,084)**	**$ (12,806,122)**	**$ (14,845,796)**	**$ (16,862,667)**	**$ (18,858,273)**	**$ (20,834,131)**	**$ (22,791,737)**

Sum Capital Costs 50 years	**$ 28,379,588**
Sum O & M Costs 50 years	**$ 59,676,943**
Sum Revenue 50 years	**$ -**
Sum Net Present Worth 50 years	**$ (88,056,531)**

Alternative 6 - Increase Wells to replace Bridge Creek Supply and abandon Bridge Creek System

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 21,225,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 21,225,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Capital Costs	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ 1,582,310
O and M	$ 155,034	$ 159,685	$ 164,476	$ 169,410	$ 174,492	$ 179,727	$ 185,119	$ 190,673	$ 196,393	$ 202,284	$ 208,353
Power (kWh)	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655
Power ($/kWh)	0.1360	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367
Power ($)	$ 949,217	$ 1,003,322	$ 1,060,512	$ 1,120,961	$ 1,184,856	$ 1,252,392	$ 1,323,779	$ 1,399,234	$ 1,478,991	$ 1,563,293	$ 1,652,401
Total Costs	**$ 2,686,561**	**$ 2,745,318**	**$ 2,807,298**	**$ 2,872,681**	**$ 2,941,658**	**$ 3,014,430**	**$ 3,091,208**	**$ 3,172,217**	**$ 3,257,693**	**$ 3,347,887**	**$ 3,443,064**
Power Value PPL Sch 37 ($/kWh)	0.081	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133
Green Tags ($/kWh) Nov 08	0.018	0.019	0.021	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,686,561)**	**$ (2,745,318)**	**$ (2,807,298)**	**$ (2,872,681)**	**$ (2,941,658)**	**$ (3,014,430)**	**$ (3,091,208)**	**$ (3,172,217)**	**$ (3,257,693)**	**$ (3,347,887)**	**$ (3,443,064)**
PWF	**0.72242**	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**
Capital Costs	**$ 1,143,094**	**$ 1,109,800**	**$ 1,077,476**	**$ 1,046,093**	**$ 1,015,625**	**$ 986,043**	**$ 957,324**	**$ 929,440**	**$ 902,369**	**$ 876,087**	**$ 850,570**
O & M Costs	**$ 797,735**	**$ 815,710**	**$ 834,157**	**$ 853,087**	**$ 872,514**	**$ 892,450**	**$ 912,908**	**$ 933,903**	**$ 955,448**	**$ 977,557**	**$ 1,000,247**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,940,829)**	**$ (1,925,511)**	**$ (1,911,633)**	**$ (1,899,181)**	**$ (1,888,138)**	**$ (1,878,493)**	**$ (1,870,232)**	**$ (1,863,343)**	**$ (1,857,817)**	**$ (1,853,644)**	**$ (1,850,816)**
Sum Capital Costs	**$ 16,222,830**	**$ 17,332,630**	**$ 18,410,106**	**$ 19,456,200**	**$ 20,471,824**	**$ 21,457,868**	**$ 22,415,191**	**$ 23,344,632**	**$ 24,247,001**	**$ 25,123,088**	**$ 25,973,657**
Sum O & M Costs	**$ 8,509,736**	**$ 9,325,446**	**$ 10,159,603**	**$ 11,012,690**	**$ 11,885,204**	**$ 12,777,653**	**$ 13,690,561**	**$ 14,624,464**	**$ 15,579,911**	**$ 16,557,469**	**$ 17,557,716**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (24,732,566)**	**$ (26,658,076)**	**$ (28,569,709)**	**$ (30,468,890)**	**$ (32,357,028)**	**$ (34,235,521)**	**$ (36,105,752)**	**$ (37,969,095)**	**$ (39,826,912)**	**$ (41,680,556)**	**$ (43,531,373)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 6 - Increase Wells to replace Bridge Creek Supply and abandon Bridge Creek System

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 21,225,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 21,225,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Capital Costs	$ 1,582,310	$ 1,582,310	$ 1,582,310	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 214,604	$ 221,042	$ 227,673	$ 234,503	$ 241,538	$ 248,784	$ 256,248	$ 263,935	$ 271,853	$ 280,009	$ 288,409
Power (kWh)	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655
Power ($/kWh)	0.2502	0.2645	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356
Power ($)	$ 1,746,588	$ 1,846,143	$ 1,951,373	$ 2,062,601	$ 2,180,170	$ 2,304,439	$ 2,435,792	$ 2,574,633	$ 2,721,387	$ 2,876,506	$ 3,040,467
Total Costs	**$ 3,543,501**	**$ 3,649,495**	**$ 3,761,356**	**$ 2,297,105**	**$ 2,421,708**	**$ 2,553,224**	**$ 2,692,040**	**$ 2,838,568**	**$ 2,993,240**	**$ 3,156,515**	**$ 3,328,876**
Power Value PPL Sch 37 ($/kWh)	0.140	0.148	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244
Green Tags ($/kWh) Nov 08	0.034	0.036	0.038	0.040	0.042	0.045	0.047	0.050	0.053	0.056	0.059
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,543,501)**	**$ (3,649,495)**	**$ (3,761,356)**	**$ (2,297,105)**	**$ (2,421,708)**	**$ (2,553,224)**	**$ (2,692,040)**	**$ (2,838,568)**	**$ (2,993,240)**	**$ (3,156,515)**	**$ (3,328,876)**
PWF	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**
Capital Costs	**$ 825,796**	**$ 801,743**	**$ 778,392**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,023,531**	**$ 1,047,425**	**$ 1,071,946**	**$ 1,097,110**	**$ 1,122,933**	**$ 1,149,433**	**$ 1,176,628**	**$ 1,204,536**	**$ 1,233,175**	**$ 1,262,565**	**$ 1,292,726**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,849,327)**	**$ (1,849,169)**	**$ (1,850,338)**	**$ (1,097,110)**	**$ (1,122,933)**	**$ (1,149,433)**	**$ (1,176,628)**	**$ (1,204,536)**	**$ (1,233,175)**	**$ (1,262,565)**	**$ (1,292,726)**
Sum Capital Costs	**$ 26,799,453**	**$ 27,601,196**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**
Sum O & M Costs	**$ 18,581,247**	**$ 19,628,672**	**$ 20,700,618**	**$ 21,797,728**	**$ 22,920,661**	**$ 24,070,095**	**$ 25,246,723**	**$ 26,451,259**	**$ 27,684,434**	**$ 28,947,000**	**$ 30,239,725**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (45,380,699)**	**$ (47,229,868)**	**$ (49,080,206)**	**$ (50,177,316)**	**$ (51,300,249)**	**$ (52,449,683)**	**$ (53,626,311)**	**$ (54,830,847)**	**$ (56,064,022)**	**$ (57,326,588)**	**$ (58,619,313)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 6 - Increase Wells to replace Bridge Creek Supply and abandon Bridge Creek System

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 21,225,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 21,225,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 297,062	$ 305,973	$ 315,153	$ 324,607	$ 334,345	$ 344,376	$ 354,707	$ 365,348	$ 376,309	$ 387,598	$ 399,226
Power (kWh)	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655
Power ($/kWh)	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014
Power ($)	$ 3,213,773	$ 3,396,958	$ 3,590,585	$ 3,795,248	$ 4,011,577	$ 4,240,237	$ 4,481,931	$ 4,737,401	$ 5,007,433	$ 5,292,856	$ 5,594,549
Total Costs	**$ 3,510,835**	**$ 3,702,932**	**$ 3,905,737**	**$ 4,119,855**	**$ 4,345,923**	**$ 4,584,613**	**$ 4,836,638**	**$ 5,102,749**	**$ 5,383,741**	**$ 5,680,454**	**$ 5,993,775**
Power Value PPL Sch 37 ($/kWh)	0.258	0.273	0.288	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449
Green Tags ($/kWh) Nov 08	0.062	0.066	0.070	0.074	0.078	0.082	0.087	0.092	0.097	0.103	0.108
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,510,835)**	**$ (3,702,932)**	**$ (3,905,737)**	**$ (4,119,855)**	**$ (4,345,923)**	**$ (4,584,613)**	**$ (4,836,638)**	**$ (5,102,749)**	**$ (5,383,741)**	**$ (5,680,454)**	**$ (5,993,775)**
PWF	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,323,677**	**$ 1,355,439**	**$ 1,388,034**	**$ 1,421,484**	**$ 1,455,810**	**$ 1,491,036**	**$ 1,527,186**	**$ 1,564,283**	**$ 1,602,352**	**$ 1,641,420**	**$ 1,681,511**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,323,677)**	**$ (1,355,439)**	**$ (1,388,034)**	**$ (1,421,484)**	**$ (1,455,810)**	**$ (1,491,036)**	**$ (1,527,186)**	**$ (1,564,283)**	**$ (1,602,352)**	**$ (1,641,420)**	**$ (1,681,511)**
Sum Capital Costs	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**
Sum O & M Costs	**$ 31,563,402**	**$ 32,918,842**	**$ 34,306,876**	**$ 35,728,359**	**$ 37,184,169**	**$ 38,675,205**	**$ 40,202,391**	**$ 41,766,674**	**$ 43,369,026**	**$ 45,010,445**	**$ 46,691,957**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (59,942,990)**	**$ (61,298,429)**	**$ (62,686,464)**	**$ (64,107,947)**	**$ (65,563,757)**	**$ (67,054,793)**	**$ (68,581,979)**	**$ (70,146,262)**	**$ (71,748,614)**	**$ (73,390,033)**	**$ (75,071,545)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 6 - Increase Wells to replace Bridge Creek Supply and abandon Bridge Creek System

Upfront Project Cost

Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 21,225,000**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 21,225,000**

Financial Parameters

Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of Power Beyond 2024	**5.70%**

Year	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 411,203	$ 423,539	$ 436,245	$ 449,332	$ 462,812	$ 476,697	$ 490,997
Power (kWh)	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655	6,980,655
Power ($/kWh)	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ 5,913,438	$ 6,250,504	$ 6,606,783	$ 6,983,370	$ 7,381,422	$ 7,802,163	$ 8,246,886
Total Costs	**$ 6,324,641**	**$ 6,674,043**	**$ 7,043,028**	**$ 7,432,702**	**$ 7,844,234**	**$ 8,278,859**	**$ 8,737,884**
Power Value PPL Sch 37 ($/kWh)	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.115	0.121	0.128	0.135	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (6,324,641)**	**$ (6,674,043)**	**$ (7,043,028)**	**$ (7,432,702)**	**$ (7,844,234)**	**$ (8,278,859)**	**$ (8,737,884)**
PWF	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,722,654**	**$ 1,764,875**	**$ 1,808,203**	**$ 1,852,666**	**$ 1,898,295**	**$ 1,945,120**	**$ 1,993,173**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,722,654)**	**$ (1,764,875)**	**$ (1,808,203)**	**$ (1,852,666)**	**$ (1,898,295)**	**$ (1,945,120)**	**$ (1,993,173)**
Sum Capital Costs	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**	**$ 28,379,588**
Sum O & M Costs	**$ 48,414,610**	**$ 50,179,485**	**$ 51,987,688**	**$ 53,840,354**	**$ 55,738,649**	**$ 57,683,770**	**$ 59,676,943**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (76,794,198)**	**$ (78,559,073)**	**$ (80,367,276)**	**$ (82,219,942)**	**$ (84,118,237)**	**$ (86,063,358)**	**$ (88,056,531)**
Sum Capital Costs 50 years							
Sum O & M Costs 50 years							
Sum Revenue 50 years							
Sum Net Present Worth 50 years							

Alternative 7 - New Intake on Canal from Deschutes River, pump station, and filtration plus added treatment systems.

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 44,267,169**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 44,267,169**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capital Costs	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089
O and M	$ 125,000	$ 128,750	$ 132,613	$ 136,591	$ 140,689	$ 144,909	$ 149,257	$ 153,734	$ 158,346	$ 163,097	$ 167,990
Power (kWh)	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548
Power ($/kWh)	0.0739	0.0781	0.0826	0.0873	0.0922	0.0975	0.1031	0.1089	0.1151	0.1217	0.1286
Power ($)	$ 373,531	$ 394,822	$ 417,327	$ 441,115	$ 466,258	$ 492,835	$ 520,927	$ 550,620	$ 582,005	$ 615,179	$ 650,244
Total Costs	**$ 3,798,620**	**$ 3,823,661**	**$ 3,850,029**	**$ 3,877,795**	**$ 3,907,036**	**$ 3,937,833**	**$ 3,970,272**	**$ 4,004,443**	**$ 4,040,440**	**$ 4,078,365**	**$ 4,118,323**
Power Value PPL Sch 37 ($/kWh)	0.069	0.069	0.071	0.074	0.077	0.078	0.080	0.071	0.081	0.081	0.081
Green Tags ($/kWh) Nov 08	0.010	0.011	0.011	0.012	0.012	0.013	0.014	0.015	0.016	0.016	0.017
Hydro Production Incentive ($/kWh)	0.020	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (3,798,620)**	**$ (3,823,661)**	**$ (3,850,029)**	**$ (3,877,795)**	**$ (3,907,036)**	**$ (3,937,833)**	**$ (3,970,272)**	**$ (4,004,443)**	**$ (4,040,440)**	**$ (4,078,365)**	**$ (4,118,323)**
PWF	**$ 1**	**0.97087**	**0.94260**	**0.91514**	**0.88849**	**0.86261**	**0.83748**	**0.81309**	**0.78941**	**0.76642**	**0.74409**
Capital Costs	**$ 3,300,089**	**$ 3,203,970**	**$ 3,110,650**	**$ 3,020,049**	**$ 2,932,086**	**$ 2,846,686**	**$ 2,763,772**	**$ 2,683,274**	**$ 2,605,121**	**$ 2,529,243**	**$ 2,455,576**
O & M Costs	**$ 498,531**	**$ 508,323**	**$ 518,371**	**$ 528,683**	**$ 539,265**	**$ 550,124**	**$ 561,268**	**$ 572,704**	**$ 584,440**	**$ 596,484**	**$ 608,843**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (3,798,620)**	**$ (3,712,292)**	**$ (3,629,021)**	**$ (3,548,731)**	**$ (3,471,351)**	**$ (3,396,810)**	**$ (3,325,040)**	**$ (3,255,978)**	**$ (3,189,561)**	**$ (3,125,727)**	**$ (3,064,419)**
Sum Capital Costs	**$ 3,300,089**	**$ 6,504,059**	**$ 9,614,709**	**$ 12,634,758**	**$ 15,566,844**	**$ 18,413,529**	**$ 21,177,302**	**$ 23,860,576**	**$ 26,465,697**	**$ 28,994,940**	**$ 31,450,516**
Sum O & M Costs	**$ 498,531**	**$ 1,006,854**	**$ 1,525,225**	**$ 2,053,907**	**$ 2,593,172**	**$ 3,143,296**	**$ 3,704,564**	**$ 4,277,268**	**$ 4,861,708**	**$ 5,458,192**	**$ 6,067,035**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (3,798,620)**	**$ (7,510,912)**	**$ (11,139,934)**	**$ (14,688,665)**	**$ (18,160,016)**	**$ (21,556,825)**	**$ (24,881,866)**	**$ (28,137,844)**	**$ (31,327,405)**	**$ (34,453,132)**	**$ (37,517,551)**
Sum Capital Costs 50 years	**$ 59,188,882**										
Sum O & M Costs 50 years	**$ 45,449,897**										
Sum Revenue 50 years	**$ -**										
Sum Net Present Worth 50 years	**$ (104,638,780)**										

Alternative 7 - New Intake on Canal from Deschutes River, pump station, and filtration plus added treatment systems.

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 44,267,169**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 44,267,169**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Capital Costs	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ 3,300,089
O and M	$ 173,029	$ 178,220	$ 183,567	$ 189,074	$ 194,746	$ 200,588	$ 206,606	$ 212,804	$ 219,188	$ 225,764	$ 232,537
Power (kWh)	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548
Power ($/kWh)	0.1360	0.1437	0.1519	0.1606	0.1697	0.1794	0.1896	0.2004	0.2119	0.2239	0.2367
Power ($)	$ 687,308	$ 726,485	$ 767,895	$ 811,665	$ 857,929	$ 906,831	$ 958,521	$ 1,013,157	$ 1,070,906	$ 1,131,948	$ 1,196,469
Total Costs	**$ 4,160,426**	**$ 4,204,794**	**$ 4,251,550**	**$ 4,300,827**	**$ 4,352,764**	**$ 4,407,509**	**$ 4,465,216**	**$ 4,526,049**	**$ 4,590,184**	**$ 4,657,801**	**$ 4,729,095**
Power Value PPL Sch 37 ($/kWh)	0.081	0.081	0.085	0.090	0.095	0.101	0.106	0.112	0.119	0.126	0.133
Green Tags ($/kWh) Nov 08	0.018	0.019	0.021	0.022	0.023	0.024	0.026	0.027	0.029	0.030	0.032
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (4,160,426)**	**$ (4,204,794)**	**$ (4,251,550)**	**$ (4,300,827)**	**$ (4,352,764)**	**$ (4,407,509)**	**$ (4,465,216)**	**$ (4,526,049)**	**$ (4,590,184)**	**$ (4,657,801)**	**$ (4,729,095)**
PWF	**0.72242**	**0.70138**	**0.68095**	**0.66112**	**0.64186**	**0.62317**	**0.60502**	**0.58739**	**0.57029**	**0.55368**	**0.53755**
Capital Costs	**$ 2,384,054**	**$ 2,314,616**	**$ 2,247,200**	**$ 2,181,747**	**$ 2,118,201**	**$ 2,056,506**	**$ 1,996,608**	**$ 1,938,454**	**$ 1,881,995**	**$ 1,827,179**	**$ 1,773,960**
O & M Costs	**$ 621,526**	**$ 634,542**	**$ 647,899**	**$ 661,606**	**$ 675,672**	**$ 690,107**	**$ 704,921**	**$ 720,123**	**$ 735,723**	**$ 751,732**	**$ 768,161**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (3,005,581)**	**$ (2,949,158)**	**$ (2,895,099)**	**$ (2,843,353)**	**$ (2,793,874)**	**$ (2,746,614)**	**$ (2,701,529)**	**$ (2,658,577)**	**$ (2,617,718)**	**$ (2,578,911)**	**$ (2,542,121)**
Sum Capital Costs	**$ 33,834,570**	**$ 36,149,186**	**$ 38,396,386**	**$ 40,578,134**	**$ 42,696,335**	**$ 44,752,841**	**$ 46,749,449**	**$ 48,687,904**	**$ 50,569,898**	**$ 52,397,077**	**$ 54,171,038**
Sum O & M Costs	**$ 6,688,561**	**$ 7,323,103**	**$ 7,971,002**	**$ 8,632,607**	**$ 9,308,280**	**$ 9,998,387**	**$ 10,703,308**	**$ 11,423,431**	**$ 12,159,154**	**$ 12,910,886**	**$ 13,679,047**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (40,523,131)**	**$ (43,472,289)**	**$ (46,367,388)**	**$ (49,210,741)**	**$ (52,004,615)**	**$ (54,751,228)**	**$ (57,452,757)**	**$ (60,111,334)**	**$ (62,729,052)**	**$ (65,307,963)**	**$ (67,850,085)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 7 - New Intake on Canal from Deschutes River, pump station, and filtration plus added treatment systems.

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 44,267,169**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 44,267,169**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Capital Costs	$ 3,300,089	$ 3,300,089	$ 3,300,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 239,513	$ 246,698	$ 254,099	$ 261,722	$ 269,574	$ 277,661	$ 285,991	$ 294,571	$ 303,408	$ 312,510	$ 321,885
Power (kWh)	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548
Power ($/kWh)	0.2502	0.2645	0.2795	0.2955	0.3123	0.3301	0.3489	0.3688	0.3898	0.4121	0.4356
Power ($)	$ 1,264,668	$ 1,336,754	$ 1,412,949	$ 1,493,487	$ 1,578,616	$ 1,668,597	$ 1,763,707	$ 1,864,238	$ 1,970,500	$ 2,082,818	$ 2,201,539
Total Costs	**$ 4,804,270**	**$ 4,883,541**	**$ 4,967,137**	**$ 1,755,209**	**$ 1,848,190**	**$ 1,946,258**	**$ 2,049,698**	**$ 2,158,809**	**$ 2,273,908**	**$ 2,395,328**	**$ 2,523,424**
Power Value PPL Sch 37 ($/kWh)	0.140	0.148	0.157	0.166	0.175	0.185	0.196	0.207	0.219	0.231	0.244
Green Tags ($/kWh) Nov 08	0.034	0.036	0.038	0.040	0.042	0.045	0.047	0.050	0.053	0.056	0.059
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (4,804,270)**	**$ (4,883,541)**	**$ (4,967,137)**	**$ (1,755,209)**	**$ (1,848,190)**	**$ (1,946,258)**	**$ (2,049,698)**	**$ (2,158,809)**	**$ (2,273,908)**	**$ (2,395,328)**	**$ (2,523,424)**
PWF	**0.52189**	**0.50669**	**0.49193**	**0.47761**	**0.46369**	**0.45019**	**0.43708**	**0.42435**	**0.41199**	**0.39999**	**0.38834**
Capital Costs	**$ 1,722,292**	**$ 1,672,128**	**$ 1,623,425**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 785,021**	**$ 802,322**	**$ 820,077**	**$ 838,298**	**$ 856,996**	**$ 876,184**	**$ 895,875**	**$ 916,083**	**$ 936,820**	**$ 958,101**	**$ 979,939**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (2,507,312)**	**$ (2,474,450)**	**$ (2,443,502)**	**$ (838,298)**	**$ (856,996)**	**$ (876,184)**	**$ (895,875)**	**$ (916,083)**	**$ (936,820)**	**$ (958,101)**	**$ (979,939)**
Sum Capital Costs	**$ 55,893,329**	**$ 57,565,457**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**
Sum O & M Costs	**$ 14,464,068**	**$ 15,266,390**	**$ 16,086,467**	**$ 16,924,765**	**$ 17,781,761**	**$ 18,657,945**	**$ 19,553,820**	**$ 20,469,903**	**$ 21,406,722**	**$ 22,364,823**	**$ 23,344,762**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (70,357,397)**	**$ (72,831,847)**	**$ (75,275,349)**	**$ (76,113,647)**	**$ (76,970,643)**	**$ (77,846,827)**	**$ (78,742,702)**	**$ (79,658,785)**	**$ (80,595,605)**	**$ (81,553,705)**	**$ (82,533,644)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 7 - New Intake on Canal from Deschutes River, pump station, and filtration plus added treatment systems.

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 44,267,169**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 44,267,169**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 331,542	$ 341,488	$ 351,733	$ 362,285	$ 373,153	$ 384,348	$ 395,878	$ 407,755	$ 419,987	$ 432,587	$ 445,565
Power (kWh)	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548
Power ($/kWh)	0.4604	0.4866	0.5144	0.5437	0.5747	0.6074	0.6421	0.6786	0.7173	0.7582	0.8014
Power ($)	$ 2,327,027	$ 2,459,667	$ 2,599,868	$ 2,748,061	$ 2,904,700	$ 3,070,268	$ 3,245,273	$ 3,430,254	$ 3,625,778	$ 3,832,448	$ 4,050,897
Total Costs	**$ 2,658,568**	**$ 2,801,155**	**$ 2,951,601**	**$ 3,110,345**	**$ 3,277,853**	**$ 3,454,616**	**$ 3,641,152**	**$ 3,838,009**	**$ 4,045,766**	**$ 4,265,035**	**$ 4,496,462**
Power Value PPL Sch 37 ($/kWh)	0.258	0.273	0.288	0.305	0.322	0.341	0.360	0.381	0.402	0.425	0.449
Green Tags ($/kWh) Nov 08	0.062	0.066	0.070	0.074	0.078	0.082	0.087	0.092	0.097	0.103	0.108
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (2,658,568)**	**$ (2,801,155)**	**$ (2,951,601)**	**$ (3,110,345)**	**$ (3,277,853)**	**$ (3,454,616)**	**$ (3,641,152)**	**$ (3,838,009)**	**$ (4,045,766)**	**$ (4,265,035)**	**$ (4,496,462)**
PWF	**0.37703**	**0.36604**	**0.35538**	**0.34503**	**0.33498**	**0.32523**	**0.31575**	**0.30656**	**0.29763**	**0.28896**	**0.28054**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,002,350**	**$ 1,025,349**	**$ 1,048,950**	**$ 1,073,170**	**$ 1,098,025**	**$ 1,123,531**	**$ 1,149,707**	**$ 1,176,568**	**$ 1,204,133**	**$ 1,232,421**	**$ 1,261,451**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,002,350)**	**$ (1,025,349)**	**$ (1,048,950)**	**$ (1,073,170)**	**$ (1,098,025)**	**$ (1,123,531)**	**$ (1,149,707)**	**$ (1,176,568)**	**$ (1,204,133)**	**$ (1,232,421)**	**$ (1,261,451)**
Sum Capital Costs	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**
Sum O & M Costs	**$ 24,347,112**	**$ 25,372,461**	**$ 26,421,411**	**$ 27,494,581**	**$ 28,592,606**	**$ 29,716,137**	**$ 30,865,844**	**$ 32,042,411**	**$ 33,246,544**	**$ 34,478,966**	**$ 35,740,416**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (83,535,994)**	**$ (84,561,343)**	**$ (85,610,293)**	**$ (86,683,463)**	**$ (87,781,488)**	**$ (88,905,019)**	**$ (90,054,726)**	**$ (91,231,293)**	**$ (92,435,427)**	**$ (93,667,848)**	**$ (94,929,298)**
Sum Capital Costs 50 years											
Sum O & M Costs 50 years											
Sum Revenue 50 years											
Sum Net Present Worth 50 years											

Alternative 7 - New Intake on Canal from Deschutes River, pump station, and filtration plus added treatment systems.

Upfront Project Cost	
Capital Costs/Power	**$ -**
Capital Costs/Water	**$ 44,267,169**
BETC	**$ -**
ETO Grant	**$ -**
Adjusted Capital Costs	**$ 44,267,169**

Financial Parameters	
Life of Bonds	**25**
Life of Project	**50**
Interest	**5.50%**
Inflation	**3.00%**
Green Tag, Cost and Value of	**5.70%**

Year	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**
Capital Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
O and M	$ 458,932	$ 472,699	$ 486,880	$ 501,487	$ 516,531	$ 532,027	$ 547,988
Power (kWh)	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548	5,054,548
Power ($/kWh)	0.8471	0.8954	0.9464	1.0004	1.0574	1.1177	1.1814
Power ($)	$ 4,281,798	$ 4,525,861	$ 4,783,835	$ 5,056,513	$ 5,344,735	$ 5,649,385	$ 5,971,400
Total Costs	**$ 4,740,730**	**$ 4,998,560**	**$ 5,270,715**	**$ 5,558,000**	**$ 5,861,266**	**$ 6,181,412**	**$ 6,519,388**
Power Value PPL Sch 37 ($/kWh)	0.475	0.502	0.531	0.561	0.593	0.627	0.662
Green Tags ($/kWh) Nov 08	0.115	0.121	0.128	0.135	0.143	0.151	0.160
Hydro Production Incentive ($/kWh)	-	-	-	-	-	-	-
Total Energy (kWh/yr)	-	-	-	-	-	-	-
Revenue Power Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Revenue Green Tag Sales	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Production Incentive	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Net	**$ (4,740,730)**	**$ (4,998,560)**	**$ (5,270,715)**	**$ (5,558,000)**	**$ (5,861,266)**	**$ (6,181,412)**	**$ (6,519,388)**
PWF	**0.27237**	**0.26444**	**0.25674**	**0.24926**	**0.24200**	**0.23495**	**0.22811**
Capital Costs	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
O & M Costs	**$ 1,291,241**	**$ 1,321,812**	**$ 1,353,185**	**$ 1,385,380**	**$ 1,418,419**	**$ 1,452,325**	**$ 1,487,119**
Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Present Worth 2011	**$ (1,291,241)**	**$ (1,321,812)**	**$ (1,353,185)**	**$ (1,385,380)**	**$ (1,418,419)**	**$ (1,452,325)**	**$ (1,487,119)**
Sum Capital Costs	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**	**$ 59,188,882**
Sum O & M Costs	**$ 37,031,657**	**$ 38,353,470**	**$ 39,706,655**	**$ 41,092,035**	**$ 42,510,454**	**$ 43,962,779**	**$ 45,449,897**
Sum Revenue	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sum Present Worth	**$ (96,220,539)**	**$ (97,542,352)**	**$ (98,895,537)**	**$ (100,280,917)**	**$ (101,699,337)**	**$ (103,151,661)**	**$ (104,638,780)**
Sum Capital Costs 50 years							
Sum O & M Costs 50 years							
Sum Revenue 50 years							
Sum Net Present Worth 50 years							