PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

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**PACIFICORP ENERGY** **Proposal Date:** 12/06/2013
**Plant:** Huntington **APR#:** 10014731

| | |
|---|---|
| **TITLE:** | U1 FGD Inlet Duct Header Replacement |
| **OBJECTIVE:** | Replace original Flue Gas Desulfurization (FGD) inlet on Unit 1, to maintain integrity of ductwork system and to avoid uncontrolled release of flue gas to atmosphere. |

**Decisions Required:** Approval of $2,718,030 (total PAC share) funding for the purchase and installation of a new FGD inlet duct.

**Executive Summary:** The current Unit 1 FGD inlet duct was installed in 1972 during original plant construction. The inlet duct is approximately 170 feet long, with a diameter of 18 feet. The duct is used to transfer flue gases from the boiler to the Flue Gas Desulfurization system. The flue gas at this point is very hot and hazardous, containing sulfur dioxide ($SO_2$) and other gases.

In the past 5 years there have been several pinhole failures in the duct, causing flue gas leaks. The leaking flue gas causes both a safety and environmental concern. Repair to the duct while Unit 1 is online is very difficult, due to access issues and sulfur dioxide gas.

This project will also address the removal of dampers and associated housings, and reinforce the absorber transition ring.

**Key Issues:**

- Replacement must be completed during an overhaul, due to the size of the ducting.
- Structural evaluation of existing duct support steel.
- Bid and award contract for fabrication and installation of the ductwork.

**Investment Request:**

| | | |
|---|---|---|
| $2,718,030 | Capital | $2,542,988 Direct (without AFUDC) |
| $ 0 | OMAG | |
| $2,718,030 | TOTAL | |

**PVRR(d):** $0.3 million benefit to customers for completion of full duct replacement compared to clad bottom half of duct.

**OMAG Budget Status:** This project will not impact the O&M budget.

**CAPEX Budget Status:** This project is in the 10-year capital plan and budgeted for the 2013, 2014 and 2015 calendar years. However, the requested amount exceeds the approved budget by $461k excluding AFUDC. Additional funding will come from APR 10014778 - U1 Circulating Water Pump Mechanical Seals for $250k, and APR 10016341 - U2 Baghouse Bag Replacement 3 Compartments, will provide $211k.

**CAPITAL EXPENDITURES - $000**

| PACIFICORP Share | PRIOR | CY13 | CY14 | CY15 | FUTURE | TOTAL |
|---|---|---|---|---|---|---|
| Budgeted (without AFUDC) | $ - | $ 15 | $ 1,799 | $ 265 | $ - | $ 2,078 |
| Escalation (2) | $ - | $ - | $ - | $ 4 | $ - | $ 4 |
| Escalated Budget (without AFUDC) | $ - | $ 15 | $ 1,799 | $ 269 | $ - | $ 2,082 |
| Requested (without AFUDC) | $ - | $ 15 | $ 2,269 | $ 259 | $ - | $ 2,543 |
| Difference (+/-) | $ - | $ - | $ (471) | $ 10 | $ - | $ (461) |
| Requested AFUDC | $ - | $ 0 | $ 57 | $ 118 | $ - | $ 175 |
| TOTAL Requested Funds * | $ - | $ 15 | $ 2,326 | $ 377 | $ - | $ 2,718 |

**Final Approver:** Mike Dunn

**Sponsor:** Darrell Cunningham

**Authors:** Mark Rutherford and Kjell Stuvstad

## 1. Introduction

The current Unit 1 FGD inlet duct was installed in 1972 during the construction of the plant. In the past 5 years there have been several failures in the duct causing pinhole flue gas leaks. The small amount of leaking flue gas causes both a safety and environmental problem. To compound the problem it is very difficult to repair any damage to the system while online due to access issues and sulfur dioxide gas.

The damage to the duct has been caused by acidic attack on the inside. The corrosion present is very difficult to detect due to ash build up on the inside surface of the duct. In order to properly repair the interior surface of the duct a complete cleaning would need to be done prior to an inspection. The cleaning of the interior surfaces of the duct is very labor intensive. Inspections have been conducted on the duct and are attached in Appendix B. There were material thickness readings taken on the metal with the original material thickness of ¼ inch (0.25”). On the bottom half there were 57 inspections with an average remaining material of 67% or 0.168”. On the bottom 60 degrees of the duct there was only 45% (0.112”) average remaining material. The most significant corrosion is on the very bottom of the duct, with the average remaining material at 14%. There have been patches made in the past but next to the patch there is worse corrosion and even some holes. Even on the top of the duct there is corrosion with pin holes, however most of this corrosion is from the outside under the insulation.

The insulation and protective outer layer surrounding the duct is in very poor condition. This allows water to leak into the insulation and saturate it. The water held in the insulation mixes with escaped flue gas to form sulfuric acid. The low pH of the water in the insulation causes very high corrosion rates. It is difficult to identify areas where water has penetrated the insulation. In order to identify the areas in question all of the insulation would need to be removed, repairs done, and the duct re-insulated.

In addition, the ongoing small flue gas leaks have exposed the nearby structural steel to $SO_2$ gases, resulting in corrosion. While the current level of damage is superficial, continued exposure will result in metal loss and the need for replacement of steel members in select areas.

This project will also address the removal of the dampers and associated housings associated with existing retired equipment, which are no longer needed and will make the duct replacement easier. The damper housings were sealed shortly after the 2010 overhaul of Unit 1. This work was done to eliminate leaks from the damper area.

## 2. Description and Strategic Fit

Eliminating leaks in the flue gas system is in accordance with PacifiCorp's RESPECT policy. This policy dictates how the plant is to respond to environmental issues. Allowing flue gas to escape unmeasured and untreated is in conflict with this policy.

Escaping flue gas poses a safety issues for those who work in the area. The safety directives given to the plants are to remove from service and repair any item not operating as designed, which have the potential to cause injury to personnel.

## 3. Benefits

### a. Safety and Environmental

The project will address the uncontrolled release of sulfur-containing flue gases to atmosphere due to holes in the inlet duct. This will ensure long-term compliance to PacifiCorp safety and environmental goals and requirements.

### b. Financial

Completion of this project will reduce cost experienced by the plant in repair of the duct. The costs are a combination of repair costs and costs due to having to take Unit 1 offline for repairs.

### c. Risk Mitigation

Replacement of the inlet duct will eliminate leaks in the system. This will reduce the risks associated with the exposure of personnel to sulfur dioxide gas, and the risk of catastrophic failure of the duct.

## 4. Alternatives Considered

Four alternates were considered: continue to patch existing ductwork, internally clad only the bottom half of the ductwork, internally clad the bottom and the upper half over two overhauls, and full duct replacement. These alternates are described in more detail below. As part of the assessment, internal inspection and spot thickness testing was conducted. The results of this inspection are summarized in Appendix B. The recommended alternative, Full Duct replacement, is the lowest cost, has the lowest risk of uncontrolled flue gas leakage.

### a. Patch Ductwork As Needed

The status quo alternative is to continue to patch the existing ductwork as needed. As the number of patches accumulates, the added weight would require an engineering study of the structure to verify that it is capable of supporting the added load. Patching also has several elements that may cause problems with the repair or overhaul schedule once the work has begun. These elements include potentially more extensive corrosion damage than expected, unanticipated buckling of existing ductwork, and damage to curved structural members, all requiring additional time to complete repairs. This approach does not address the safety and environmental concerns, and is not recommended as a viable option.

### b. Clad Bottom Half of Duct

In this option, the lower half of the duct, which has the most extensive overall loss of wall thickness, is clad with carbon steel. Rolled steel sheets are placed on the inside of the duct and welded to the existing, compromised duct steel. Repairs are performed to the upper half of the duct as needed during the overhaul, and as needed throughout the remaining life of the plant. Leaks from the upper half would result in the acid gas condensing in the insulation, the acid running down the outside of the duct, and further damaging the original carbon steel duct. As the upper half of the duct continues to leak, the damage to the upper half would be expected to accelerate.

### c. Clad Bottom Half and Upper Half of Duct over Two Overhauls

This option is essentially the same as the option to only clad the bottom half of the duct, except that ongoing patching of the upper half of the duct is avoided by cladding the upper half on the overhaul following the overhaul where the bottom of the duct was cladded. While this address the upper and lower half of the duct, the higher cost and potential for leaks until the second overhaul makes this alternative unattractive.

### d. Full Duct Replacement

With this option, the entire duct is replaced with new, pre-fabricated sections of carbon steel. This option has the benefit of restoring the duct to original condition, which has provided a service life of over 36 years. Based on this service life, it is recommended that the original material, carbon steel, be used again. This is the recommended alternative.

In summary from the economic analysis the PVRR for each option above is:

| | Options: | | |
|---|---|---|---|
| a. | U1 FGD Inlet Duct – Continue to Patch as Needed | ($4,312,986) | PVRR cost |
| b. | U1 FGD Inlet Clad Bottom Half Only Duct Header Replacement | ($3,278,802) | PVRR cost |
| c. | U1 FGD Inlet Clad Bottom CY 14 & top half CY 18 Duct Header Replacement | ($3,712,557) | PVRR cost |
| d. | U1 FGD Inlet Full Duct Header Replacement | ($3,001,875) | PVRR cost |

The PVRR analysis below is a comparison between option d. (proposed project) above and option b. (next best alternative) above.

**Present Value of Revenue Requirement (PVRR) Analysis (Cost) Benefit:**

| | |
|---|---|
| PVRR of Project Presented | ($3,001,875) |
| PVRR of Next Best Alternative | ($3,278,802) |
| PVRR(d) benefit | $ 276,927 |

## 5. Risk Factors Evaluated

### a. Technical Risk

The technical risk with replacement of the ducting and expansion joints is considered to be limited, as the original fabrication drawings are available and field measurements of the existing ducting can be made. Minor field adjustments to the ductwork can be made during the installation period as required.

The existing duct support structure will be evaluated to determine what measures will be required as some structural members have to be removed during the replacement phase. Additional temporary supports may be required, or a phased removal and installation approach may be used, reducing the load on the support structure to the point that support braces can be temporarily removed. The exact method(s) will be determined during the engineering efforts.

### b. Contractual Risk

Only qualified fabrication and installation contractors will be allowed to bid on this project. The contractors must have demonstrated experience with this type of project, in terms of shop capability (even if sub-contracted), rigging experience, and experience with removal/replacement during overhauls. Procurement support will be required through the bidding and contract execution phases.

### c. Fabrication, Installation, and Schedule Risk

The completed components must be delivered to the site no later than a month prior to the start of the Unit 1 overhaul, currently scheduled for September 27, 2014 to November 3, 2014. As stated in the Contractual Risk section above, a qualified contractor will be selected for the fabrication and replacement of the ductwork.

Installation risks for a large duct replacement project are many, and will be addressed through a series of planning meetings between the installation contractor, plant personnel, and with input from the PacifiCorp safety group. Although there are several installation risks associated with the project, the risks are manageable and the replacement can be completed without personnel injury or damage to plant property.

Schedule risk will be addressed throughout the project, from the bidding phase through execution. A key criterion in the installation contract award will be the bidder's proposal schedule and installation plan, showing how the replacement can be completed during the overhaul and how they will address delays (wind delays, fit-up issues, etc.). The successful contractor will have a sound plan and have provided several field-tested schedule recovery plans. PacifiCorp will independently monitor the replacement progress and immediately review concerns with the contractor, so that the schedule can be maintained. Installation time estimates were obtained from a contractor familiar with the site and this type of project, and it was confirmed that the duct replacement can be completed within the available outage time.

Duct replacement acceptance criteria will include leak-testing, so that the integrity of the ductwork can be established prior to flue gas being introduced.

## 6. Retirement and Removal Information

Duct work and associated dampers will be retired form service and new ductwork work added.

## 7. Financial Analysis

**Project Name: Huntington U1 FGD Inlet Full Duct Header Replacement Compare to U1 FGD Inlet Clad Bottom Half Only Duct Header Replac**

(In Thousands of Dollars) --- **The financial information presented here is a comparison of the proposed project vs. the next best alternative**.

*Non-Oregon Book Depreciation Lives*

**Project Economics:**

| | Customer Revenue Requirement | Cash Flows Prior to Regulatory Adjustment | Cash Flows After Regulatory Adjustment * |
|---|---|---|---|
| **PVRR Benefit or (Cost) Total Project** | $277 | | |
| **PVRR Benefit or (Cost) PPW Share** | $277 | | |
| *Oregon Book Depreciation Lives (PPW Share)* | ($35) | | |
| **Project NPV** | | $209 | $34 |
| **Project IRR** | | 9.3% | 7.4% |
| **Discount Rate Used** | | 6.74% | 6.7% |
| **Capital Productivity Ratio** | | 1.3 | 1.0 |
| **Payback Period (years)** | | 11.3 Years | 10.5 Years |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| **Capital Spending w/o AFUDC** | $0 | $765 | $100 | $0 | $0 | $0 |
| **Capital Spending w AFUDC** | $0 | $784 | $140 | $0 | $0 | $0 |
| **Net Cash Flow Without Regulatory Recovery** | | | | | | |
| Annual | $0 | ($753) | ($77) | $22 | $21 | $20 |
| Cumulative | $0 | ($753) | ($830) | ($808) | ($787) | ($767) |
| **Net Cash Flow With Regulatory Recovery** | | | | | | |
| Annual | $0 | ($749) | $2 | $104 | $99 | $94 |
| Cumulative | $0 | ($749) | ($747) | ($643) | ($544) | ($449) |
| **Incremental Earnings Before Interest & Taxes** | | | | | | |
| Without Regulatory Recovery | $0 | ($4) | ($39) | ($41) | ($40) | ($39) |
| With Regulatory Recovery | $0 | $4 | $87 | $91 | $86 | $81 |
| **Incremental Earnings** | | | | | | |
| Without Regulatory Recovery | $0 | $9 | ($11) | ($38) | ($37) | ($36) |
| With Regulatory Recovery | $0 | $14 | $67 | $43 | $41 | $39 |
| **Annual Revenue Requirement** | | | | | | |
| Calculated | $0 | $18 | $128 | $131 | $126 | $120 |
| Recovered | $0 | $18 | $128 | $131 | $126 | $120 |

* Includes regulatory lag of zero months.

*Oregon Book Depreciation Lives*

**Project Economics:**

| | Customer Revenue Requirement | Cash Flows Prior to Regulatory Adjustment |
|---|---|---|
| **PVRR Benefit or (Cost) Total Project** | ($35) | |
| **PVRR Benefit or (Cost) PPW Share** | ($35) | |
| **Project NPV** | | $14 |
| **Project IRR** | | 7.0% |
| **Discount Rate Used** | | 6.7% |
| **Capital Productivity Ratio** | | 1.0 |
| **Payback Period (years)** | | 11.3 Years |

## 8. Regulatory Recovery Strategy

The asset will be included in construction work-in-progress (CWIP) until the project is used and useful. Allowance for funds used during construction (AFUDC) will be applied while the asset remains in CWIP. Recovery through retail rates will begin once the asset is included in the applicable regulatory filing as made in each state. Filings include general rate cases or other cost recovery mechanisms that may allow for recovery of all or part of the project costs. Assets (and any impacts on the company's ongoing revenue requirement) will be included in regulatory filings if the project is or will be used and useful during the test year used in the respective filing**.**

Rate recovery is subject to approval by the public service commission in each state served by the company and such approval will be sought on a state-by-state basis. Each commission will evaluate the prudence of the company's investment and ultimately determine any allowed recovery. The company anticipates this project will be approved as a prudent investment and recovery of its ongoing revenue requirement will be allowed, including a return on the amount included in rate base.

## 9. Project Contingency

No project contingency is included in this funding request.

## 10. Procurement Strategy

The procurement strategy is based on obtaining fabrication and installation through a single turn-key contract. Only qualified fabrication and installation contractors will be allowed to bid on this project. The contractors must have demonstrated experience with this type of project, in terms of shop capability (even if sub-contracted), rigging experience, and experience with removal/replacement of major equipment during overhauls.

An engineering consultant will be utilized to function as the owner's engineer, to evaluate the existing duct support structure, and to provide support in development of the bid documentation (design drawings, specifications & standards).

## 11. Project Management

Kjell Stuvstad from Generation Engineering will be the project manager. Steve Daley at the Huntington plant will be the plant contact, and coordinate activities with plant operations and maintenance. Procurement will be through either the Huntington plant or the procurement group at the North Temple Office, depending on work load and availability.

## 12. Project Milestones

| | |
|---|---|
| December 15, 2013 | APR Approval |
| March 1, 2013 | Duct Fabrication & Installation Scope Complete |

| | |
|---|---|
| April 1, 2013 | Duct Fabrication & Installation RFP Issued |
| May 1, 2014 | Award Duct Fabrication & Installation Contract |
| September 1, 2014 | Duct Components Delivered & Staged on site |
| Sept. 27 – Nov. 3, 2014 | Duct Replacement During Unit 1 Overhaul |
| March 1, 2015 | Final Invoices Paid & Project Close-Out |

## 13. Recommendation

It is recommended that the Unit 1 Absorber Inlet Duct be replaced, ensuring the integrity of the flue gas duct system, reducing personnel exposure to flue gases, and reducing unplanned outage time for repairs.

**Appendices**

Appendix A - HTN Unit 1 Absorber Inlet Duct Photos (pdf document) (Attached to APR)
Appendix B – Inspection Results (pdf document) (Attached to APR)
Appendix C – Economic Model (see below)

**PacifiCorp - Thermal Economic Analysis Model** Page 1 of 2

n U1 FGD Inlet Full Duct Header Replacement Compare to U1 FGD Inlet Clad Bottom Half Only Duct Header Rep Offical Curve: 9/30/2013

**Inputs:**

| | |
|---|---|
| Dollar Year - | 2013 |
| In-Service Date - | 2014 |
| Average Inflation Rate - | 1.8% |
| Discount Rate - | 6.7% |
| Analysis Period - | 24 years |

| Calendar Year | Capital Excluding AFUDC (In Thds) | AFUDC (In Thds) | Book Depreciable Life (Years) | Avoided O&M Savings or (Increases) (In Thds) | Forced Outage Benefit (Equiv. Days) | Risk of Forced Outage (Percent) | Incr. Station Use Increase or (decrease) (KW) | Heat Rate (Restore) or Loss (Btu/Kwh) | Capability Restore or (Loss) (MW) |
|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | 23 | | | | | | |
| 2014 | $765 | $19 | 23 | $2 | | | | | |
| 2015 | $100 | $40 | 22 | $11 | | | | | |
| 2016 | | | 21 | $11 | | | | | |
| 2017 | | | 20 | $11 | | | | | |
| 2018 | | | 19 | $11 | | | | | |
| 2019 | | | 18 | $411 | | | | | |
| 2020 | | | 17 | $11 | | | | | |
| 2021 | | | 16 | $11 | | | | | |
| 2022 | | | 15 | $411 | | | | | |
| 2023 | | | 14 | $11 | | | | | |
| 2024 | | | 13 | $11 | | | | | |
| 2025 | | | 12 | $411 | | | | | |
| 2026 | | | 11 | $11 | | | | | |
| 2027 | | | 10 | $11 | | | | | |
| 2028 | | | 9 | $411 | | | | | |
| 2029 | | | 8 | $11 | | | | | |
| 2030 | | | 7 | $11 | | | | | |
| 2031 | | | 6 | $411 | | | | | |
| 2032 | | | 5 | $11 | | | | | |
| 2033 | | | 4 | $11 | | | | | |
| 2034 | | | 3 | $411 | | | | | |
| 2035 | | | 2 | $11 | | | | | |
| 2036 | | | 1 | $11 | | | | | |

**Project Assumptions:**

**Fixed Assumptions:**

| | | |
|---|---|---|
| Capacity Factor | 87.16% | |
| Heat Rate | 9,642 | Btu/KWh |
| Incremental Fuel | $ 23.94 | $/Ton |
| BTU/lb | 11,700 | |
| MDC | 459 | MW |
| Plant Property Tax | 1.32% | |
| Total Capital Cost (Spent & Saved) | $ 924 | (In Thds) |
| $/mmBtu | $ 1.514 | |

| Calendar Year | Medium IPC In Use ($/MWH) |
|---|---|
| 2013 | N/A |
| 2014 | N/A |
| 2015 | N/A |
| 2016 | N/A |
| 2017 | N/A |

| | Med | Low | High | Med - OR |
|---|---|---|---|---|
| Net After-Tax Cash Flow NPV (In Thds) | $209 | $209 | $209 | $14 |
| Internal Rate of Return (IRR) | 9.3% | 9.3% | 9.3% | 7.0% |
| Simple Payback Period of Original Investment | 11.3 Years | 11.3 Years | 11.3 Years | 11.3 Years |
| Net Benefit to Capital Ratio | 1.3 | 1.3 | 1.3 | 1.0 |
| Present Value Revenue Requirement PVRR (In Thds) | $277 | $277 | $277 | ($35) |

**PacifiCorp - Thermal Economic Analysis Model** Page 2 of 2

FGD Inlet Full Duct Header Replacement Compare to U1 FGD Inlet Clad Bottom Half Only Duct Header Official Curve: 9/30/2013

## Calculated Revenue Requirement Detail (In Thds)

Medium Level

| Calendar Year | Capital Revenue Requirement | O&M Cost Reduction (Increase) | Heat Rate (Cost) or Benefit | Station Use & Cap. Restore or (Impact) | Outage (Cost) Benefit | Total (Cost) Benefit | Cumulative PV Revenue Req. Benefit |
|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | |
| 2014 | ($20) | $2 | | | | ($18) | ($16) |
| 2015 | ($139) | $11 | | | | ($128) | ($125) |
| 2016 | ($143) | $12 | | | | ($131) | ($230) |
| 2017 | ($137) | $12 | | | | ($126) | ($323) |
| 2018 | ($132) | $12 | | | | ($120) | ($407) |
| 2019 | ($126) | $452 | | | | $326 | ($194) |
| 2020 | ($121) | $12 | | | | ($109) | ($260) |
| 2021 | ($116) | $13 | | | | ($103) | ($320) |
| 2022 | ($111) | $477 | | | | $366 | ($123) |
| 2023 | ($106) | $13 | | | | ($93) | ($169) |
| 2024 | ($101) | $13 | | | | ($88) | ($211) |
| 2025 | ($96) | $505 | | | | $409 | ($30) |
| 2026 | ($91) | $14 | | | | ($77) | ($62) |
| 2027 | ($86) | $14 | | | | ($72) | ($90) |
| 2028 | ($81) | $534 | | | | $453 | $75 |
| 2029 | ($76) | $15 | | | | ($62) | $54 |
| 2030 | ($71) | $15 | | | | ($56) | $36 |
| 2031 | ($66) | $565 | | | | $499 | $185 |
| 2032 | ($61) | $15 | | | | ($46) | $172 |
| 2033 | ($56) | $16 | | | | ($41) | $161 |
| 2034 | ($52) | $599 | | | | $548 | $296 |
| 2035 | ($48) | $16 | | | | ($32) | $289 |
| 2036 | ($72) | $17 | | | | ($55) | $277 |
| | | | | | | | |
| **Totals** | ($2,111) | $3,354 | $0 | $0 | $0 | $1,243 | |
| **2013 PVRR** | ($1,113) | $1,390 | $0 | $0 | $0 | $277 | |

## Net After-Tax Cash Flows Without Regulatory Recovery (In Thds)

Official Curve: 9/30/2013

| Calendar Year | Net Operating (Cost) or Benefit | Property Tax | Income Tax Payments | Capital Investment | After-Tax Cash Flow | PV After-Tax Cash Flow | Cumulative PV After-Tax Cash Flow |
|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | |
| 2014 | $2 | | $10 | ($765) | ($753) | ($684) | ($684) |
| 2015 | $11 | ($10) | $22 | ($100) | ($77) | ($65) | ($749) |
| 2016 | $12 | ($12) | $22 | | $22 | $18 | ($731) |
| 2017 | $12 | ($11) | $20 | | $21 | $16 | ($716) |
| 2018 | $12 | ($11) | $18 | | $20 | $14 | ($702) |
| 2019 | $452 | ($10) | ($150) | | $292 | $191 | ($510) |
| 2020 | $12 | ($9) | $15 | | $18 | $11 | ($499) |
| 2021 | $13 | ($9) | $14 | | $17 | $10 | ($490) |
| 2022 | $477 | ($8) | ($163) | | $306 | $165 | ($325) |
| 2023 | $13 | ($8) | $13 | | $18 | $9 | ($316) |
| 2024 | $13 | ($7) | $12 | | $18 | $9 | ($307) |
| 2025 | $505 | ($7) | ($174) | | $324 | $143 | ($164) |
| 2026 | $14 | ($6) | $12 | | $19 | $8 | ($156) |
| 2027 | $14 | ($6) | $11 | | $20 | $8 | ($148) |
| 2028 | $534 | ($5) | ($186) | | $343 | $125 | ($23) |
| 2029 | $15 | ($5) | $11 | | $21 | $7 | ($16) |
| 2030 | $15 | ($4) | $11 | | $21 | $7 | ($10) |
| 2031 | $565 | ($4) | ($198) | | $363 | $109 | $99 |
| 2032 | $15 | ($3) | $10 | | $22 | $6 | $105 |
| 2033 | $16 | ($3) | $10 | | $23 | $6 | $111 |
| 2034 | $599 | ($2) | ($219) | | $379 | $93 | $205 |
| 2035 | $16 | ($1) | ($5) | | $10 | $2 | $207 |
| 2036 | $17 | ($1) | ($6) | | $10 | $2 | $209 |
| | | | | | | | |
| **Totals** | $3,354 | ($142) | ($891) | ($865) | $1,457 | $209 | |
| **2013 NPV** | $1,390 | ($79) | ($322) | ($779) | $209 | | |