

“IPP Renewed” – Ensuring the Future of the Intermountain Power Project



Owners and participants in the Intermountain Power Project are moving forward with an ambitious plan that will cement IPP’s role as a pillar of the Central Utah economy for decades to come.

Nicknamed “IPP Renewed,” the effort includes the construction of new natural gas-fueled electricity generating units at the IPP site, upgrades to the Project’s Southern Transmission System linking IPP to Southern California, and development of hydrogen production and long-term storage capabilities.

Permitting activities with the Millard County Commission commenced in late September and design of key facilities is well under way. Construction is slated to begin in 2022, with new electricity generating units coming on line in the Spring of 2025.

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“We are excited to be moving forward with a plan that will not only continue the Intermountain Power Project, but continue it in a way that positions IPP as a leader in the transition to a new energy future,” said Dan Eldredge, Intermountain Power Agency General Manager. “IPP Renewed holds potential for supporting the development of entirely new industries for Central Utah communities. We’ve created this new update publication to keep those communities informed every step of the way.”

Renewal – The Fruit of Years of Planning

The IPP Renewed project did not happen overnight. Faced with changing electricity markets and regulatory policies, participants in the Intermountain Power Project began discussions almost a decade ago to determine what to do when power purchase agreements from the original project expire.

Rather than walk away when the coal units close – a situation currently being faced by many coal communities nationwide – IPA and the project participants diligently worked to develop new energy projects that could build upon the substantial infrastructure already in place at IPP.

Central to that discussion was the fate of the coal-fueled generating units that comprised the core of the original IPP. Those units faced a trio of headwinds including:

- **Loss of Existing Customers.** Since the Intermountain Power Project’s inception, nearly all of the electricity generated has been consumed by six municipal power systems located in Southern California. Under California state law, these municipalities are prohibited from purchasing coal-fueled electricity after their existing power purchase agreements expire.
- **Weak Market for Coal-fueled Electricity.** Persistently low natural gas prices and declining costs for renewable energy combined to make coal-fueled electricity less competitive across western United States power markets. Utilities in the region are closing other coal-fueled generating stations and shifting resource portfolios away from coal, blocking IPA’s efforts to secure replacement customers for IPP’s coal-fueled electricity.
- **Environmental Regulatory Issues.** For IPP’s coal units to continue operating beyond 2025, power purchasers would incur significant additional expenses for compliance with new coal combustion residuals regulations and likely additional air emissions controls.

World Is Watching Millard County

A key feature of the IPP Renewed project is the plan to utilize “green” hydrogen. Unlike hydrogen produced from fossil fuels, green hydrogen is produced by electrolysis – extracting hydrogen from water – using renewable energy sources (such as wind, solar, and geothermal) to power the process.

Hydrogen can be used to fuel electricity generation and produces none of the greenhouse gas emissions associated with climate change. Hydrogen can also be stored for later use. And unlike batteries, which can store electricity for hours, hydrogen can be stored for many months. This can facilitate seasonal energy storage, saving up energy produced from renewable resources whenever they are abundant for use in hot summer or cold winter months when renewable energy supplies may run short.

All of the key components of this project – including the safe production, transportation, storage, and utilization of hydrogen – are mature technologies that have been deployed for decades in other industries. IPP Renewed is integrating known technologies and applying them at scale to support electricity generation.

Green hydrogen production costs are expected to plummet over the next several years as projects like IPP Renewed advance in numerous locations around the world. Energy and environmental publications and policymakers around the globe are taking special notice of the IPP Renewed project for its unique advantages in being able to use both existing infrastructure and salt cavern storage potential.

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To 2025 and Beyond – A Project for Today and Tomorrow

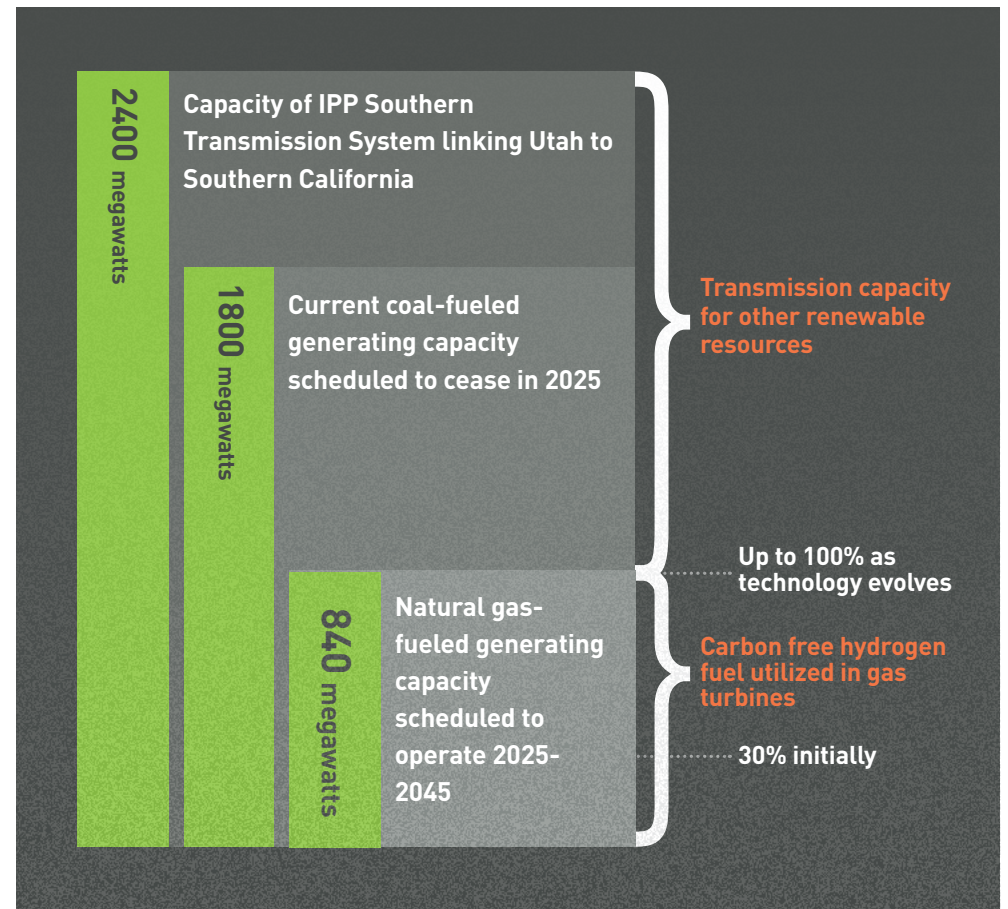
Intermountain Power Project participants have extended their agreement to work together for another 50 years beyond the expiration of their current contracts. But the Project is expected to continue to evolve over that half century.

A key element of the Project is the 2,400-megawatt-capacity Southern Transmission System, which is being upgraded and modernized as part of the IPP Renewed effort now under way. That transmission system provides a direct current link from the IPP site to Southern California and is a crucial element in the Western United States power grid.

IPP Renewed construction is expected to employ about 800 workers, with peak employment in 2023. Once on-line in 2025, the new generating units will help preserve operating jobs that would otherwise be lost when the coal units close. Making Millard County a world-recognized center for green hydrogen deployment also provides opportunities for additional economic development supporting hydrogen-using industries as diverse as transportation, steelmaking, and chemicals manufacturing.

The IPP Renewed project also includes construction of 840 megawatts of new natural gas-fueled electricity generating capacity. That is enough to keep the Southern Transmission System operating, allowing the remainder of the transmission system's capacity to support development of new energy projects – such as wind, solar, and geothermal power – in the regions surrounding IPP.

The new gas-fueled units are commercially guaranteed to be able to consume 30 percent hydrogen when they start up in 2025 and advance to consuming 100 percent hydrogen by 2045. IPP's fortuitous location atop the largest geologic salt dome in the West makes it an ideal location to support a new hydrogen production and storage industry that could supply not only the power plant, but also a number of other industries transitioning to a new hydrogen economy over the coming decades.



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Project Schedule at a Glance

- November 2019**
Gas Transportation Contract Award
- February 2020**
Gas Turbine-Generator Contract Award
- December 2021**
Generation Engineer-Procure-Construct Contract Award
- March 2022**
Site Preparation Begins
- September 2022**
Transmission System Upgrade Contracts Award
- December 2022**
Hydrogen Supply and Storage Contract Award
- July 2025**
Generation Enters Service
- April 2026**
Transmission System Upgrades Enter Service

Construction to Commence in 2022

IPP Renewed continues on a schedule that will allow for the replacement of the Project's existing coal units with two natural gas combined-cycle power generation trains totaling 840 MW by 2025. IPA signed a contract with Mitsubishi Power Americas in February 2020 for the supply of the units, which are currently in the detailed design stage. An Engineering, Procurement, and Construction (EPC) contractor will be selected this year and begin construction activities in Q2 2022. The new generating units will commence service in May 2025. Mitsubishi has committed to performance requirements that will allow the units to operate on 30 percent hydrogen upon startup in 2025, reaching 100 percent hydrogen fuel by 2045.

IPA advertised a "multi-stage" Request for Proposals in June 2020 for the supply and storage of green hydrogen fuel, and stage 1 responses have been received and evaluated. Stage 2, scheduled to be advertised in June 2021, will involve a deeper dive into the required technical and commercial arrangements, including identifying renewable energy resources, transportation and storage, and needed commercial structures. The anticipated award of the hydrogen supply project is December 2022.

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Upgrades to existing facilities will be undertaken to provide the dispatchable energy required to maintain reliability and support HVDC transmission. These include both the construction of new converter stations and the expansion of AC switchyards at Intermountain and Adelanto, as well as the installation of reactive power equipment at Intermountain. Construction of these facilities will be carried out in stages, beginning with the expansion of the Adelanto AC switchyard in June 2021. All upgrades are to be completed by July 2027.



Construction at the Intermountain Power Project site was an economic boon to Millard County in the 1980s. Construction for IPP Renewed is expected to employ about 800 workers, with peak employment in 2023.

IPP and Central Utah – A Decades-long Partnership

The concept for the Intermountain Power Project originated in 1973 when utility leaders from Utah and California met to begin exploring interest in a joint action agency power project. Electricity generation at the Delta, Utah, site commenced in 1986 and the project evolved to include a two-unit coal-fueled generating station, two transmission systems, a microwave communication system and a railcar service center, all built as a joint undertaking by 35 utilities in Utah and California. At its peak, the Project generated enough electricity to supply the needs of more than 1.5 million homes.

Since IPP commenced operations, it has served as an economic engine for Utah.

When IPP was conceived, visionary project organizers obtained long term commitments for the purchase of electricity generated at the site – a prudent strategy that ensured

significant economic benefits for the state with minimal risk to the Utah communities that own the Project.

That strategy paid big dividends. Since IPP commenced operations, it has served as an economic engine for Utah. The Utah Foundation reported that IPP, through a multiplier effect, makes an average contribution per year of \$866 million in economic activity to the state of Utah, providing 4,600 non-farm jobs and \$222 million in household earnings. IPA has paid more than \$700 million in direct tax payments to Utah and Utah communities.

The Project consistently ranked as one of the most efficient and cleanest coal-fueled generating stations of its size in the nation. The Project's equivalent availability and capacity factors were regularly 5 percent to 10 percent higher than national averages. Sulfur dioxide and mercury emissions have consistently been among the lowest for coal-fueled power plants across the nation.

Existing Infrastructure Makes IPP a Regional Energy Hub

The Intermountain Power Project was originally designed to accommodate four coal-fueled generating units instead of the two that were built. IPP's 4,614-acre plant site near Delta, Utah, provides ample space for additional energy development and a seasoned energy workforce is already in place.

The energy storage capacity of the salt dome adjacent to IPP is larger than the total capacity of all of the batteries currently installed worldwide.

In addition to land and skilled people, existing infrastructure and resources include ample water, two major electricity transmission systems, a microwave communications system, access to railroad and highway transportation, close proximity to existing interstate pipelines, and a site located directly over the only high quality geologic salt dome in the Western United States.

The geologic salt dome, which is already being used for storage of liquid fuels in solution-mined caverns deep underground, provides opportunities for grid-scale real-time and seasonal energy storage. The energy storage capacity of the salt dome adjacent to IPP is larger than the total capacity of all of the batteries currently installed worldwide.

Water use, always a concern in Utah, will be significantly reduced under the IPP Renewed project as compared to the current coal-fueled operations. The amount of water used for electrolysis to produce enough hydrogen for a full year of gas turbine operations at a 30 percent fuel blend is approximately equal to the amount of water consumed by the coal units at full load on only three hot summer days.



Renewal – The Fruit of Years of Planning Continued from Page 1

IPP’s owner, the Intermountain Power Agency, undertook efforts to find other purchasers for the coal-fueled units or the electricity they generate, but was unsuccessful. At 1,800 megawatts, the power plant was far too large for the Utah municipalities comprising IPA and other coal-fueled power plants were already closing across the nation. In 2017, IPA decided to cease electricity generation using coal in 2025.

“We are saddened to announce this decision, but factors beyond our control make continued operation of the coal units unfeasible after their current power purchase agreements expire,” said Ted Olson, IPA former chairman. “We are mindful of the

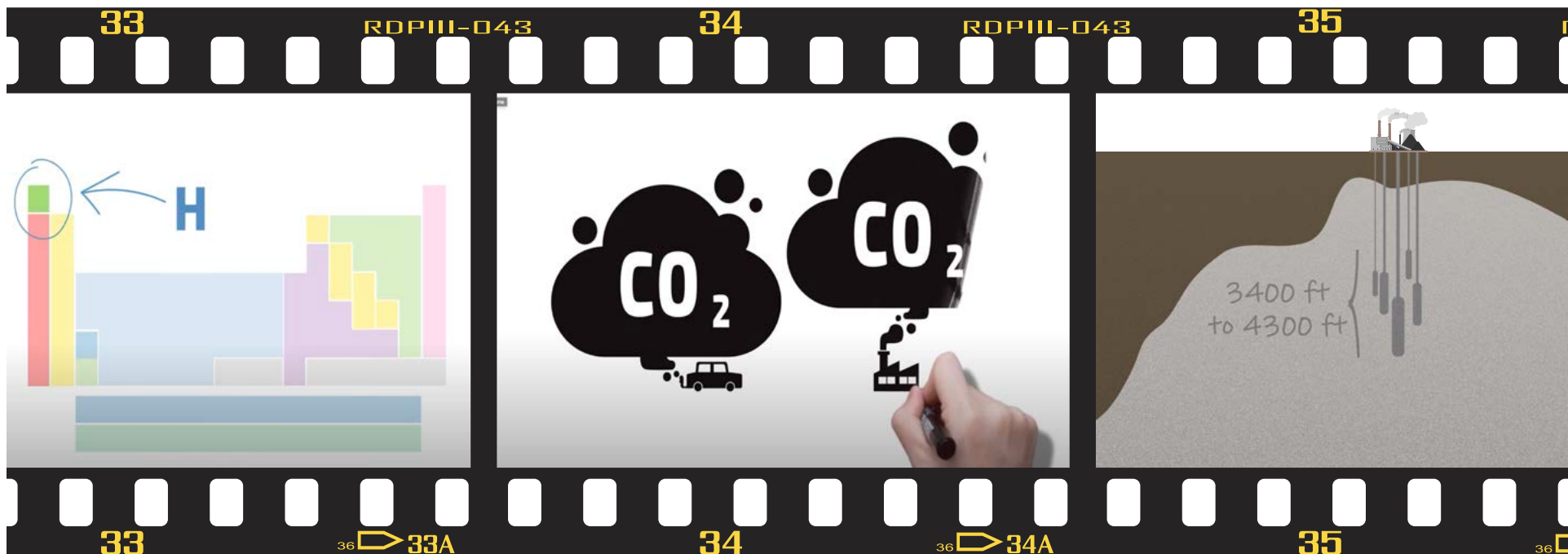
substantial economic contribution IPP makes to rural Utah and we will vigorously continue efforts we began years ago to diversify and provide project benefits for its employees and surrounding communities for as long as feasible.”

Rather than walk away when the coal units close – a situation currently being faced by many coal communities nationwide – IPA and the project participants diligently worked to develop new energy projects that could build upon the substantial infrastructure already in place at IPP. Those efforts led to the IPP Renewed project described on these pages.

Stay Up to Date on the IPA Website

IPA maintains a webpage that provides more information about IPP Renewed, including text and video describing the project background, the facilities to be constructed, the use of renewable energy to produce green hydrogen, and above- and below-ground

technologies that will be utilized. The page also features a project schedule that is continually updated as project tasks are completed. To learn more, please visit ipautah.com/ipp-renewed.



Who’s Who in IPP

For more than three decades, the Intermountain Power Project has been a model of regional energy cooperation. Municipal utilities, from some of the smallest in the country to the largest, and rural electric cooperatives have worked together to provide safe and reliable electricity. As IPP Renewed moves forward, the Project will include 30 participants with operations in six states. These entities will continue to play key roles:



Intermountain Power Agency
A political subdivision of the State of Utah, the 21 municipalities comprising IPA and participating in IPP Renewed are the owners of the Project.



Intermountain Power Service Corporation
This separate corporation employs the people who work at the Intermountain Power Project.



Los Angeles Department of Water and Power
The largest purchaser of electricity from IPP, this municipal utility also serves as the Operating Agent and Project Manager for the IPP Renewed project.



Intermountain Power Agency is committed to openness and responsiveness to its community stakeholders as it embarks on the exciting next era for the Intermountain Power Project. Questions and concerns about IPP Renewed may be sent to dan@ipautah.com. Future issues of *IPP Renewed Update* will publish answers to common questions that are received.

IPP Renewed Update is published by the Intermountain Power Agency to keep Utah communities informed regarding the Intermountain Power Project’s progress in developing new energy infrastructure for the benefit of the state and Western electricity consumers. For more information, visit www.ipautah.com.

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