Cast From The 20th Century
Sculpted Into The 22nd Century
Perfecting The New Energy Alignment

CALIFORNIA GRID OPPORTUNITY FOR DEPENDABLE FIRM POWER &
LARGE VOLUME, LONG DURATION ("LVLD") ENERGY STORAGE
TO BOLSTER ELECTRICAL GRID STABILIZATION &
ASSIST DECARBONIZATION MANDATES

Cat Creek Energy & Water Storage Renewable Power Station
The Project

The Cat Creek Energy & Water Storage Renewable Power Station ("Project") is in the tradition of the Great Western Water Projects which stored water, generated electricity, and controlled flooding, without their downside environmental impacts.

The Cat Creek Energy Project ("Project"):

- Creates a new, critically needed, off-stream Water Storage Facility - 100,000 Acre-Feet ("AF") - delivering water to meet multiple needs for replenishing aquifers, making possible anticipated population growth, satisfying the requirements of agricultural irrigation, sustaining local aquatic and other mammal and avian species, and providing increased flood control.

- Provides a transformational, critically needed, Renewable Energy Facility - 870 MW nameplate of clean, firm Capacity and Power Generation with technology designed to react to changing electrical grid conditions in seconds.

- Builds the most innovative, critically needed, Large Volume-Long Duration ("LVLD") Energy Storage Facility in the USA – 87,120 MWhrs.

PROCESS AND CONDITIONS

Cat Creek Energy (CCE) results in clean, reliable, and cost-effective electrical energy for consumers and communities as articulated in California’s enabling legislation for energy storage and clean energy:

- Benefits the public interest
- Raises the bar in the decarbonization effort
- Synergies result in superior product for communities and consumers.
- Sets the standard for Social Justice mandates.
SUSTAINABLE OVERSIGHT

The Cat Creek Project incorporates an Oversight Board of public and private stakeholders to fund and guide the restoration of temporarily disturbed areas, the protection of aquatic and wildlife habitats, and the mitigation of potential impacts on them. Once the mitigation process is satisfied, the Board shall focus on enhancing ecological and social-economic values related to the Project region.

STAKEHOLDER BOARD GUIDANCE

The Board is directed to disperse funds annually for (a) environment mitigation, (b) community selected projects, (c) local economic sustainability, and (d) other elective local impact uses.

Harnessing earth’s natural resources converting sun, wind, water to generate energy requires the construction and operation of facilities are performed in harmony with the environment. No project exemplifies the least/no impact circular mandate as Cat Creek.

Sustainable Development Policy

Far from urban centers, Cat Creek realizes its responsibility to protect the environment and rural lifestyles while advancing the economy in the region. Those policies are reflective in what is achieved from such a game-changing project that adds needed large water storage resources to southern Idaho while shifting the burden of electrical grid resource adequacy from fossil fuels to large volume, large duration (“LVLD”) renewable energy that operates more efficiently and more rapidly than those generators it is replacing.

- Trybrid technology modules—wind—solar—pumped storage hydro.
- 3,500 GWhrs of annual renewable energy production.
- 720,000 kW of Forward Capacity & Ancillary Services.
- Grid resiliency, resource capacity, resource adequacy.
21st CENTURY MICROGRID

Cat Creek multi-generation technology resembles a utility, an 870 MW microgrid able to offer all-resource renewable power combined with all the services expected of any IOU [investor owned utility], in one Project platform.

TRANSMISSION FLEXIBILITY

Cat Creek positioned its interconnection to take advantage of major transmission systems in the area. Cat Creek connects to the majority of the Idaho Power 230 kV system on multiple lines at the Rattlesnake Substation and connects to the 500 kV PacifiCorp/Idaho Power existing line and the new Segment 8 Gateway West 500 kV line when completed.

6,000 MW CAPACITY INTERTIE

Cat Creek optioned for installing Network Upgrades even though an Energy Resource. By negotiating this unique option, Idaho Power has determined the Transmission POD on its system for Cat Creek is the Midpoint Substation. This selection provides for maximum flexibility in transmission path opportunities.

Resiliency, Security, Reliability, Integrity

Cat Creek is both catalyst and outcome for the smooth transition to a fully decarbonized electrical grid. View the project from space and you see the location is at the beating heart of the world’s largest machine - the electrical transmission grid of the Western United States. Because Cat Creek Energy lies in the path of seven transmission on-ramps, 6,000 MW of capacity, you could easily describe it as a needed pacemaker for this increasingly stressed machine and its volatile market.

The Cat Creek connection to the grid is accomplished through a dual-circuit 230 kV system, each line capacity able to handle the full 870 MW output of the facility terminating with separate 1000 MVA transformers.

Cat Creek breaks with tradition in this transformation, taking the necessary steps to in its design and implementation to become the new standard to emulate in firm clean energy production.
Economics

JEDI Model - Department of Energy Metrics for the Project. The 10 year development cycle has a quantifiable multiplier effect on the economic well-being of the communities in the area. The Pumped Storage Hydro/ Pumped Hydro Energy Storage portion of the Project produces $987,900,000 in direct and induced labor impacts and $1,310,000,000 in value added benefit to the surrounding communities of Fairfield, Pine, Featherville, Mountain Home, and Boise. Annual operations of the PSH/PHES will yield $19.0 million in direct and induced labor impact and an additional $32.8 million in value added benefit to the surrounding communities.

Construction Period. The construction period for the hydro portion of the Project will be approximately 36 months with another 12 months for the additional renewable generation modules of the Project. The timeline of continuous construction is over four years. Few large-scale infrastructure projects manage to keep so many personnel employed at the same site for so long a period of time. The size of the workforce necessitates secondary and ternary employment of magnitude in the transportation, hospitality, housing, and food chains to maintain roughly the size of a large rural community, as defined by United States Census Bureau, working on-site.

Covid-19 - Major new infrastructure programs that are urgently needed to overcome the calamity from Covid-19. Some will be financed by the taxpayer. This project will be financed by private investors. The Project provides a jumpstart to economic stimulus not only due to its size, but also through its ability to provide both more water storage for population growth and commercial activities in the Boise Valley and to balance and provide support for additional Variable Renewable Energy installations.
Performance that Outlasts and Outperforms Any Existing Power Technology

“No one needs much persuading that renewable energy needs to be stored. There are three main ways: dams, batteries, and PSH. The way in which dams wreak ecological havoc is well documented. Batteries are not now cost-competitive, they are to one extent or another "dangerous," they produce waste both during their production process and at the end of their (relatively very short) lives. Flow batteries have less environmental impact, but their cost will not be competitive for another generation. Large Volume – Long Duration PSH is now cost-competitive, its 100-year history indicates that it is low-risk, it produces far less waste both in the production process and at the end of its long life, its main residue a lake that will continue to be used by every form of local life for millennia.

So in addition to the "circular economy," we should consider "closing loops," "fully-burdened costs," and "fully-realized benefits" to our framing vocabularies. The only new facts we have to add to our case concern battery residue and other unwanted "externalities." A carbon-free, cost-competitive, recycling and therefore sustainable water and energy economy is within our reach. What’s needed now is its deployment and demonstration on a large scale within a human and environmental landscape fitted to it. “ Dr. Gordon Brittan

Cat Creek Energy & Water Storage Renewable Power Station
New Infrastructure Can Augment the Existing Ecosystem

in a world where abundant, natural renewable energy from the sun, wind and water captured and converted to electrons for healthier communities and shared prosperity through economic development, Cat Creek is committed to sustainability. Sustainable power, water supply, wealth, and improvements under the guidance of shareholders, communities, and affected environment. Cat Creek Energy will be the first and foremost solution for an array of obstacles confronting the Western energy market and be able to mitigate and solve those problems for the next 100 years. Here lies the real value of project returns; its duration as a major power producer in the West in the decarbonization transition with exceptional extended life for decades beyond any debt retirement.
CARBON EMISSIONS REDUCTION

The CCE Project will offset 3,140,535 metric tons of CO2 on an annual basis, the equivalent of 553,947 passenger cars driven a total of 6,364,545,514 miles.

ADDITIONAL FLOOD CONTROL

As projected by most federal agencies, a changing climate is inevitable. Under certain conditions, CCE can provide temporary flood control measures to lessen the water volume in the Boise River.

CHANGING CLIMATE

The Boise Basin will suffer from earlier snowmelt by up to two weeks. This poses increasing pressure on the Bureau of Reclamation operations. CCE can capture that early snowmelt for downstream storage facilities that might otherwise not be stored because of the dams’ operating parameters restrictions on fill timing.

ENVIRONMENTAL REVIEW

• The 99% of the private lands the Project relies on have already gone through a rigorous 1,079 day local permitting process plus an additional one year negotiated development agreement process.

• For approval, the local county jurisdiction’s equivalent of an Environmental Impact Statement, A Wildlife Mitigation Plan was written and submitted. The subsequent investigation and scrutiny at the local government level resulted in all Conditional Use Permits and a Development Agreement being approved for construction and operations.

• The Project is locally permitted into five separate Conditional Use Permits back in 20117 and a Development Agreement in 2018.

• Final Federal permitting and licensing agreements will require the Project to conform to all of the mandated guidelines governing development of a large-scale water pumped storage hydro electricity-generating facility. This permitting will be incorporated into two basic agreements: FERC hydropower license and Bureau of Reclamation Lease of Power Privilege.
FEDERAL LANDS RENEWABLE ENERGY FUTURE

Our commitment to avoiding or mitigating impacts to aquatic life, avian and wildlife happens from monitoring pre and post construction by independent third parties who specialize in the environment.

MONITORING

The Cat Creek directive is to minimize impacts on aquatic and terrestrial life through mitigation or avoidance. Short-term monitoring will convert into long-term monitoring during the operational phase with constant comparative analysis to confirm baseline assumptions and observations in the permitting cycle.

An Energy Project Boosting Water Storage for the West

The Boise Basin requires another 188,000 acre-feet of new water storage to avoid a severe water shortage. The Project satisfies this requirement by 43% without the ecological impacts of a new run of the river impediment (dam).

PERMANENT IMPROVEMENTS

The construction and improvements will disturb approximately 36 acres on federal lands. The intent is to use an existing transmission right of way reducing any additional public environmental displacement. The balance of lands displaced are private holdings that will remain in farm and ranch activities, managed already for best environmental practices and in conjunction with various agencies for habitat and wetlands protection. Sage grouse, ungulates, and other species habitat are monitored regularly.

- Powerhouse at least 300 ft in depth and up to 400 ft in length. Its width would be 100 ft to include the vertical portion of the 18 ft diameter penstocks that serve as part of the ternary design.

- Six – 18 ft. diameter penstocks will go from the powerhouse up the slope to Cat Creek Reservoir.

- A transmission line will also go from the powerhouse up the slope to the switch/collector station on top of the bluff.

- A substation behind the powerhouse will house six environmentally compatible transformers and associated GIS substation equipment.

- Cat Creek gives exceptional flexibility to contracted and vested parties with a firm generation renewable resource and long duration energy storage especially for the rapidly expanding Energy Imbalance Market adding both transmission grid security and grid stability. All from one renewable energy facility. As its own Balancing Authority, CCE could provide all these services to the other BAs in the Western grid.
The landscape will remain much the same, open and agricultural. As in the case of both Little Camas and Anderson Ranch Reservoirs, both of which are man-made, the changes made on it are to the same end - the generation of power, the storage and delivery of water, and flood control.

Cat Creek Reservoir ("CCR") becomes an indispensable extension of the Boise Basin water storage system. CCR adds to the storage scheme, it does not take away from current management objectives. Necessary water storage, with minimum environmental impact on federal lands solves, not compounds or compromises best practices and innovation for the Boise water drainage system. Add the layer of irrefutable need for Large Volume, Long Duration energy storage to provide clear and quantifiable replacement for fossil-fuel and peaking conventional power generation, and the result is a Project that provides all the services the Western electrical grid must rely on for security, resiliency, and integrity, accomplishing a 100% decarbonized platform by 2050.
Adjacency to the federal resource, topography and private ownership secure Cat Creek as the best location for a pumped storage hydro facility in the Western United States. But there’s more. The location is sunny, windy and tucked into a landscape with fewer than two residents per square mile. Thus, the wind and solar components will operate in accompaniment and value-add to the facility by creating a 100% renewable cadre of electrons and electrical services.

The West needs the Project to integrate, and in so doing, accelerate the energy transition to zero emissions. That can only be achieved by Large Volume, Long Duration energy storage. "The Project will be the longest-duration, largest-output, fully-renewable energy storage facility on the Western electrical grid, displacing 3,628 football fields of Li-ion Battery Energy Storage Systems that would otherwise be needed.

The average slope is around 60% grade between Anderson Ranch Reservoir and Little Camas Prairie bluff 800 ft above. The distance of the slope in the powerhouse lands area is 1,844 ft. to the top of the bluff; 43.4% grade. 850 ft. of this slope is Cat Creek Energy property.

Non Nova Sed Nove
(Not new things, but in a new way.)

Needed clean energy, water storage, and flood control for the West by intentionally disrupting the unmistakable effects of a changing climate through innovation, not exasperation.
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