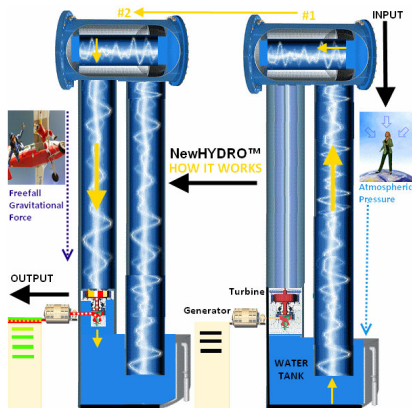




## NewHYDRO™ Grid-Connected Demonstration Project



*NewHYDRO™ renewable energy, in conjunction with traditional distribution grids, is one of the most promising options for large-scale “green” generation.*

Hydro hybrid applications could be the lowest-cost option for adding atmospheric power to the generation fleet, and costs are expected to decrease as the technologies mature and deployment increases. Several plant owners are considering installing first-of-a-kind utility-scale *NewHYDRO™* hybrid technology in numerous countries in order to meet renewable energy regulatory targets, avoid plant emissions, and avoid fuel costs.

Planetary Civilisation Ventures Pty. Ltd. plans to implement a hydro hybrid project at the slated 108-MW GreenIPP [Green Independent Power Producer] Renewable Energy Generating Station located in Sydney, New South Wales, Australia. Together with utility companies and operators and other participants, PCV will create a collaborative project to provide relevant and timely knowledge and data from this utility-scale *NewHYDRO™* hybrid project for the industry and public. Consulting engineers and an expert team will support the project host in selecting the integration design and conduct independent plant performance monitoring and evaluation and economic assessments. Collaborative funders will be integrally involved in the project journey via site visits and regular updates.

### Value

Reliable and cost-effective renewable energy is a critical element for the widespread deployment of variable resources and their integration into the existing grid infrastructure.

*NewHYDRO™* renewable energy, in conjunction with traditional

- Develop a commercial-scale *NewHYDRO™* pilot plant in parallel with design, siting, and permitting.
- Develop an efficient integration design for utility scale commercial plant.
- Develop the plan for performance evaluation and testing.
- Includes designing a monitoring system that will capture key performance metrics.
- Carry out performance commissioning testing, monitoring and evaluation, component testing, economic assessment, and reporting of operating parameters.
- Be seen in world markets to be accelerating development of technologies and plant that avoid fuel costs and plant emissions.

distribution grids, is one of the most promising options for large-scale “green” generation. *NewHYDRO™* hybrid energy allows a plant to serve (from an operator’s point of view) as a dispatchable resource with firm capacity, reducing the need for regulating and backup reserves. No fuel is consumed and zero emissions are generated on an annual basis.

### Drivers and Trends

There is significant worldwide pressure to reduce carbon emissions and develop viable renewable generation alternatives.

Reducing the variability of carbon emissions of existing fossil fuel run thermal power plants by adding a storage backup reserve renewable component is one option for addressing these regulatory pressures. Federal, state, and municipal governments have established goals and financial incentives to encourage renewable energy industry growth.

This support has prompted the announced development of numerous renewable energy projects involving solar, wind, geothermal, retrofitting existing fossil-fueled assets with solar hybrid technology, and yet only one small (~3 MW) solar thermal hybrid project has been built. Many existing fossil-fueled plants need decommissioning and their capacity replaced with reliable renewable applications, and there is a need to demonstrate *NewHYDRO™* integration at utility scale to validate the technical and economic performance.

## Project Summary

In 2009, PCV completed a study to determine the feasibility of integrating NewHYDRO™ hybrid technology into existing renewable solar and wind power farm models, including a detailed case study for a 899 MW Generating Station.

PCV assessed the near-term commercial capability of mega scale wind and solar projects – the North Sea Offshore Wind, the Desertec North Africa project, and GE's largest US wind farm project – that all require transmission line construction from their remote locations to urban markets.

These studies included a broad modeling effort to evaluate all feasible comparable advantage features of NewHYDRO™ based on these three detailed case studies.

This project will support the first commercial-scale demonstration of NewHYDRO™ hybrid technology.

The project will include three distinct phases:

Phase 1 will begin in conjunction with the commercial-scale plant development, in parallel with the design, siting, and permitting.

The focus will be on NewHYDRO™ hybrid technology selection and development of an efficient integration design.

An expert team will support PCV in selecting a design that can achieve the desired cost and performance targets. This task is expected to take approximately two months.

During site construction, in Phase 2, PCV will develop the plan for the hybrid plant performance evaluation and testing.

This will include developing test procedures and designing a monitoring system that will capture key performance metrics for the grid integrated hybrid plant.

Testing plans for commissioning the hybrid plant also will be developed. This phase is expected to take three months to six months.

Phase 3 takes place during commissioning and operations when PCV will carry out performance monitoring and evaluation, component testing, economic assessment, and reporting of operating parameters.

A key objective is to establish procedures that can be used to develop guidelines for NewHYDRO™ utility scale plant design, performance evaluation and testing, and monitoring that can be applied at other sites worldwide.

The testing and monitoring activities will be conducted once the plant is operational so that the full range of operating modes and plant loads are experienced.

PCV will help identify potential means of improving the cost-effectiveness of the integrated hybrid process, including modifications or operating strategies that could improve plant economics.

## Deliverables

PCV intends to provide annual reports covering each phase of project development: design selection, construction and commissioning, and operations and testing.

PCV also intends to provide collaborative funders with timely updates in the form of quarterly web casts, progress reports, and site visits, which would include non-proprietary information on O&M requirements, cost and performance validation and impacts on plant reliability and controls will be included in these updates.

In addition to these tangible deliverables, PCV intends to provide collaborative funders with access to the knowledgeable team of experts involved in the project.

## Price of Project

Please contact PCV for project cost estimates and your collaborative price to participate in this project.

## Project Status and Schedule

Work on this project is expected to begin in late 2010, and should be completed within 1 year.

## Who Should Participate

Companies generating electricity that are interested in the performance, integration, and costs of NewHYDRO™ hybrid technology systems for grid integration. Entities interested in accelerating the development of NewHYDRO™ Renewable Energy Power Stations should also participate.

## Contact Information

For more information, contact the PCV at +61+466 283 559 ([enquiries@planetarycivilisationventures.com](mailto:enquiries@planetarycivilisationventures.com)).

---

### Planetary Civilisation Ventures Pty Ltd

7/3 Heidelberg Avenue, Newington, NSW 2127, Australia

+61+466 283 559 • [enquiries@planetarycivilisationventures.com](mailto:enquiries@planetarycivilisationventures.com) • <http://planetarycivilisationventures.com>

© 2010 Planetary Civilisation Ventures Pty Ltd All rights reserved. NewHYDRO™ and 'A better way' are service marks of Planetary Civilisation Ventures Pty Ltd