DOCKETED	
Docket Number:	25-EPIC-01
Project Title:	Electric Program Investment Charge 2026–2030 Investment Plan (EPIC 5)
TN #:	265504
Document Title:	Ria Banerjee Comments - WTG Research Proposal Titled UTILIZE HYDRO
Description:	N/A
Filer:	System
Organization:	Ria Banerjee
Submitter Role:	Public
Submission Date:	8/8/2025 5:33:11 PM
Docketed Date:	8/8/2025

Comment Received From: Ria Banerjee
Submitted On: 8/8/2025
Docket Number: 25-EPIC-01

WTG Research Proposal Titled UTILIZE HYDRO

Additional submitted attachment is included below.

CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

Electric Program Investment Charge 2026–2030 (EPIC 5) Research Concept Proposal Form

The California Energy Commission (CEC) is currently soliciting research concept ideas and other input for the Electric Program Investment Charge 2026–2030 (EPIC 5) Investment Plan. For those who would like to submit an idea for consideration, please complete this form and submit it to the CEC by **August 8, 2025**. More information about EPIC 5 is available below.

To submit the form, please visit the e-commenting link: https://efiling.energy.ca.gov/EComment/ECommentSelectProceeding.aspx and select the Docket **25-EPIC-01**. Enter your contact information and then use the "choose file" button at the bottom of the page to upload and submit the completed form. Thank you in advance for your input.

1. Please provide the name, email, and phone number of the best person to contact should the CEC have additional questions regarding the research concept:
   Ria Banerjee, Founder and CEO, We Think Global Inc. and WENEXUS Solutions

   Email: Ria.banerjee@wethinkglobal.com
   Mobile: 1-818-416-5002

2. Please provide the name of the contact person's organization or affiliation:

   Ria Banerjee, Founder and CEO, We Think Global Inc.
   www.wethinkglobal.com

3. Please provide a brief description of the proposed concept that you would like the CEC to consider as part of the EPIC 5 Investment Plan. What is the purpose of the concept, and what would it seek to do? Why are EPIC funds needed to support the concept?

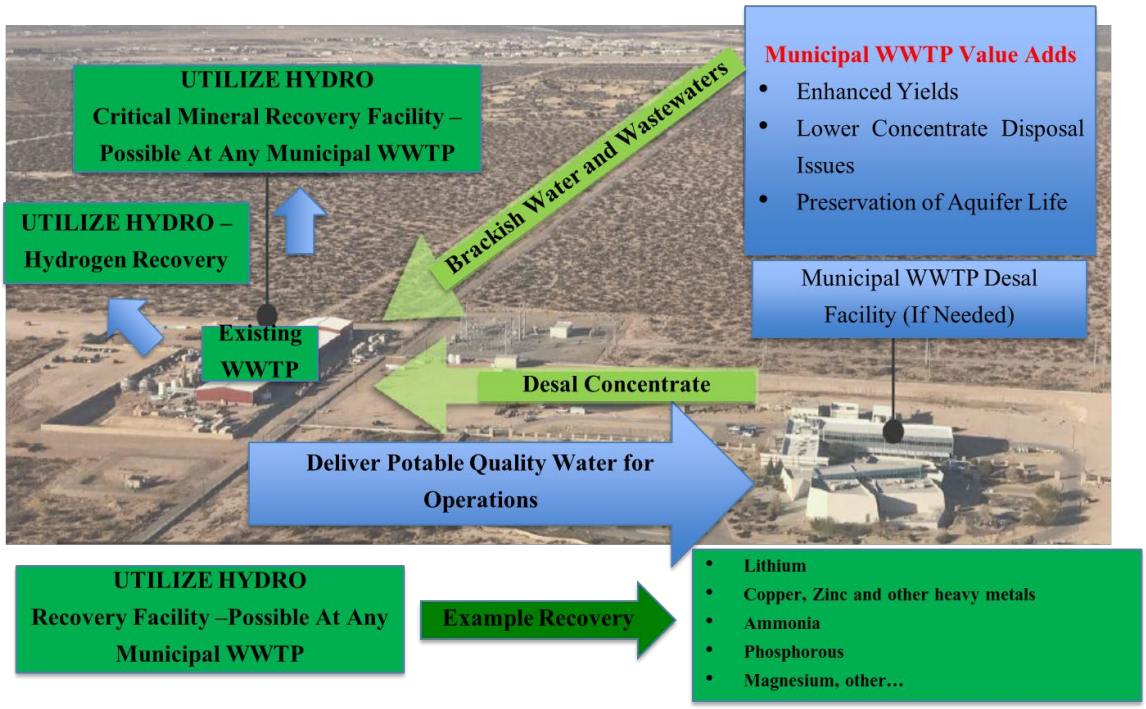
   WTG proposes a project titled "UTILIZE HYDRO – Utilizing Wastewater Treatment Plants to Recover Critical Metals, Lower GHGs and Generate Clean Hydrogen". California WWTP infrastructure is over 100 years old and most appropriately the State is currently in the midst of a first-ever needs assessment that will become available in several more years.

Based on preliminary evidence from our internal discovery assessment of customer pain point and results from actual scientific trials, WTG believes that our project will achieve the following:

1) Increase performance of WWTP at lower costs.
2) Generate sources of revenue.
3) Increase renewable energy.
4) Achieving lower costs for ratepayers for both water and energy in California

Diagram of "UTILIZE HYDRO"

"Utilize Hydro" proposes a treatment train for both wastewater and solids that a) recovers critical minerals and metals from wastewaters and soils and b) utilizes (amongst the tech) electrocoagulation technologies to both treat waters and recover hydrogen from the water. Our treatment train utilizes "plug 'n play" solutions that are customized to deliver the best combo for the most efficient WWTP treatment options and do not require any civil construction as all are modular with high throughput and can be easily merge with current operations.



Technologies

WENEXUS is the deployment of Ultra Solutions and the Intersection of Water Energy and a New Economy. Our management team consists of environmental scientists, engineers, and business specialists with much experience and have achieved significant acclaim.

The WENEXUS Suite of Solutions is composed of patented, plug-in-play, energy efficient, decentralized water and soil treatment solutions that require no on-site construction.

ENVIRO TECH is a compact wastewater treatment plant that combines all aspects of solids separation and purification and has been proven in hundreds of sites including dredging, mining, dairy ponds, municipal and pharmaceutical applications.

ECUBE is electrocoagulation and has been commissioned by the Indian Atomic Commission to recover uranium.

EADOX is Advanced Oxidation system used to increase capacity for Municipal wastewater treatment plants with high organic contaminants.

EDESAL is our collaboration in mobile desalination.
ENVIROPETS is our technology collaboration with the US Department of Defense that combines the DOD PFAS Effluent Treatment Systems (PETS) with our ENVIRO Tech to treat PFAS in any type of soil of aqueous solutions to non-detectable levels.

EBIO is a biological STP developed by Waterneer, India and BIOKUBE of Denmark.

These are our Ultra Solutions, which either alone or in tandem with another, is able to treat any type of effluent or soil to any standard necessary for the customer.

Awards

Examples of awards and significant milestones include the following: California Energy Commission' Calseed Award; Cleantech Open (CTO) Accelerator Award; National Defense Center for Energy and Environment Award (NDCEE); CRADA with Army Corp of Engineers in Installation Efficiency Initiatives and Commercialization MOU with the United States Air Force in Environmental Remediation.

WEXUS Application for Recovery of Critical Minerals/Metals

We Think Global Inc.'s is pleased to discuss in greater detail the applications of our WENEXUS Treatment Train for the Recovery of Critical Minerals/Metals – an application we term CIRCRIT.

WTG has been awarded the Calseed award for an innovation we have named CIRCRIT. CIRCRIT combines our technologies in a proprietary and seamless treatment train to recover critical minerals and metals to further enable a circular economy.

Example of High value applications of CIRCRIT include the following:

At municipal WWTP, CIRCRIT enables the recovery of Inorganic Nitrogen, Total Organic Carbon, Sulfur, Magnesium, Calcium, Copper, Nickel, and other metals.

At Geothermal Brine CIRCRIT enables recovery Li, Mg, Calcium, Sodium

At Oil and GAS Produced Waters reserves, CIRCRIT enables the recovery of Ba, Co, Li, Rb, V, and Eu

At Mining Waste Streams and Mine Tailings areas CIRCRIT enables the recovery Lithium, Nickel, REE, Copper, Aluminum, Cobalt, Silver, Steel, Silicon.

CIRCRIT is a self-contained, IOT enabled technology, mobile treatment train solution that enables both the on-site recovery of metals/minerals, purification of the metals to established standards and inclusion of the information via AI driven models into the CIRCRIT ARCHIVE, a virtual market of these recovered clean energy resources.
CIRCRIT can a) alleviate strain on the component supply chain for clean energy and thereby reducing cost/ time needed to transition to a net-zero b) furthers treatment of wastewaters and sludge utilizing PV enabled tech will both reduce the pressure on the grid and reduce GHG emissions from landfills and other waste disposal methods c) CIRCUIT will be manufactured in California and hence creates jobs for manufacturing, assembly, IT, AI Analytics and workforce development in clean energy for disadvantaged communities and d) Provides access to the clean energy economy for by enabling small-business entrepreneurship.

CIRCRIT addresses pollution burdens that disproportionately impact disadvantaged and/or low-income communities. (for example: air pollution/air quality, traffic congestion, low-cost/retrofit applications) and improves the resiliency and reliability of electricity service in locations that that are being impacted by extreme weather-related events such as wildfires.

CIRCRIT was utilized at the Ragn-Sells wastewater treatment plant in Stockholm, Sweden to treat water for reuse in the facility. The system achieved between 80% and 99% reduction in Vanadium, Cadmium, Nickel, Copper, Lead, Zinc and Chromium and the treated effluent achieved reuse standards of the country.

CIRCRIT a) isolates the metals in a NIST (National Institute of Standards) compliant form to be purchased by manufacturers b) allows remaining sludge to be utilized for cement manufacture, soil erosion etc. c) enables water reuse and/or aquifer recharge and other sustainable practices. Planned enhancements to CIRCRIT includes AI driven predictive models to locate metals from various waste stream sources. Input data for the AI models includes NASA-JPL's EMIT satellite data and others.

CAPTURING HYDROGEN FROM ELECTROCOAGULATION

Open-source fuel cell technologies for capturing already exist in the market.

4. In accordance with Senate Bill 96[i], please describe how the proposed concept will "lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory energy goals." For example, what technical and/or market barriers or customer pain points would the proposed concept address that would lead to increased adoption of clean energy technology or innovation? Where possible, please provide specific cost and performance targets that need to be met for increased industry and consumer acceptance. For scientific analysis and tools, provide more information on what data and information gaps the proposed concept would help fill, and which specific parties or end users would benefit from the results, and for what purpose(s)?

It is imperative that EPIC support this proposal in order to establish the cost/benefit analysis in detail to wastewater treatment plants. Municipal and other WWTP are price sensitive and risk averse, as they should be. On the other hand our proposed project can a) save them money b) save the rate payers money 3) enable renewable energy generation for the local energy utility 4) lower emissions and enable profit via a decentralized circular economy for critical minerals and metals that will be crucial in the next 10 years to enable the clean economy technologies. Utilize Hydro is proposing a business model that that has not been tried before i.e. to decentralize mineral and metal recovery by mining what is already above ground in a decentralized manner. EPIC funding in

California is needed so the DAC and other disadvantaged communities in particular can benefit from this clean economy.

5. Please describe the anticipated outcomes if this research concept is successful, either fully or partially. For example, to what extent would the research reduce technology or ratepayer costs and/or increase performance to improve the overall value proposition of the technology? What is the potential of innovation at scale? How will innovation lead to ratepayer benefits in alignment with EPIC's guiding principles to improve safety,[ii] reliability,[iii] affordability,[iv] environmental sustainability,[v] and equity?[vi]

   If all WWTP can generate enough Hydrogen to be self-sufficient (and there is evidence that this can be done) then there would be no or very low cost of energy. This would benefit the ratepayers immediately. Excess fuel cells can be sold to the energy utility and would be clean energy. Landfills and hauling costs would be reduced. The ratepayers would also benefit from the circular economy by having a market for the recovered minerals and metals.

6. Describe what quantitative or qualitative metrics or indicators would be used to evaluate the impacts of the proposed research concept.

   Quantitative: All costs, Jobs, Amouns of Critical Minerals, Market Scope for the Recovering Minerals/Metals, Amount of Hydrogen Generated, Risks, etc.

   Qualitative: Quality of Life due to lowered emissions, economic prosperity based on market size of the resources generated, natural habitat health

7. Please provide references to any information provided in the form that supports the research concept's merits. This can include references to cost targets, technical potential, market barriers, equity benefits, etc.

   Example of Similar Work Being Done in El Paso, Texas: https://envirowaterminerals.com/ without the Hydrogen Production – WENEXUS Solutions has patented versions of this tech and more and WENEXUS will be manufacturing all of the technologies in California and building Union jobs in California through several collaborations with established Unions such as ILWU.

For Hydrogen recovery from wastewater please see the following publication as one example:

Electrocoagulation cell for the production of hydrogen without carbon emission and simultaneous treatment of textile wastewater

Luiz Thiago Vasconcelos da Silva [a], Andr´e Gadelha de Oliveira [b], Jefferson Pereira Ribeiro [a],
Amanda Fonseca Lopes [a], Rouse da Silva Costa [a], Eliezer Fares Abdala Neto [c],
Tecia Vieira Carvalhod [d], Francisco Belmino Romero [a], Joa˜o Victor Santos Sales [a],
Francisco Thiago Correia de Souza [a], Ronaldo Ferreira do Nascimento [a],*
[a] Department of Analytical Chemistry and Physical Chemistry, Federal University of Ceara´ (UFC),
Block 939, Campus of Pici, Fortaleza-CE, Brazil
[b] Center of Technological Sciences, University of Fortaleza (Unifor), Fortaleza, CE, Brazil
[c] Christus University Center (Unichristus), Fortaleza-CE, Brazil
[d] North and Northeast Studies and Research Center (Nepen), Fortaleza-CE, Brazil

8. The EPIC 5 Investment Plan must support at least one of five Strategic Goals:[vii]
    a. Transportation Electrification
    b. Distributed Energy Resource Integration
    c. Building Decarbonization
    d. Achieving 100 Percent Net-Zero Carbon Emissions and the Coordinated Role of Gas
    e. Climate Adaptation

    Please describe in as much detail as possible how your proposed concept would support these goals.

    Utilize Hydro directly addresses b, d and e above.

    b) Our project will generate Clean Hydrogen to both utilize at the plant and potentially have extra fuel cells for use in another place. Majority of our technologies can be fueled via solar micro-grid and batteries and therefore, we will be using very little of existing grid energy.

    d) Our proposals are fully clean and enable lower GHGs through lower landfill, clean energy generation and enabling a circular economy towards lower waste

e) Our central feature is climate adaptation i.e. as the climate changes so will the composition of the wastewaters and soil – our treatment train is modular and can adapt to the situation on land as time goes on. Climate adaptation also includes being able to provide for metals and minerals without further disrupting the ecosystem and our project enables the circular economy and directly address the need to recover critical metals without disturbing the land further.

About EPIC

The CEC is one of four EPIC administrators, funding research, development, and demonstrations of clean energy technologies and approaches that will benefit electricity ratepayers of California's three largest investor-owned electric utilities.

EPIC is funded by California utility customers under the auspices of the California Public Utilities Commission.

To learn more about EPIC, visit: https://www.energy.ca.gov/programs-and-topics/programs/electric-program-investment-charge-epic-program

EPIC 5 documents and event notices will be posted to: https://www.energy.ca.gov/proceeding/electric-program-investment-charge-2026-2030-investment-plan-epic-5

Subscribe to the EPIC mailing list to stay informed about future opportunities to inform the development of EPIC 5: https://public.govdelivery.com/accounts/CNRA/signup/31897

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i See section (a) (1) of Public Resources Code 25711.5 at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=25711.5.

ii EPIC innovations should improve the safety of operation of California's electric system in the face of climate change, wildfire, and emerging challenges.

iii EPIC innovations should increase the reliability of California's electric system while continuing to decarbonize California's electric power supply.

iv EPIC innovations should fund electric sector technologies and approaches that lower California electric rates and ratepayer costs and help enable the equitable adoption of clean energy technologies.

v EPIC innovations should continue to reduce greenhouse house gas emissions, criteria pollutant emissions, and the overall environmental impacts of California's electric system, including land and water use.

vi EPIC innovations should increasingly support, benefit, and engage disadvantaged vulnerable California communities (DVC). (D.20-08-046, Ordering Paragraph 1.) DVCs consist of communities in the 25 percent highest scoring census tracts according to the most recent version of the California Communities Environmental Health Screening Tool (CalEnviroScreen), as well as all California tribal lands, census tracts with median household incomes less than 60 percent of state median income, and census tracts that score in the highest 5 percent of Pollution Burden within CalEnviroScreen, but do not receive an overall CalEnviroScreen score due to unreliable public health and socioeconomic data.

vii In 2024 the CPUC adopted five Strategic Goals to guide development of the EPIC 5 Investment Plan. A description of the goals can be seen in Appendix A of CPUC Decision 24-03-007 available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M527/K228/527228647.PDF