International Partnership for Hydrogen and Fuel Cells in the Economy

Costa Rica Update

40th IPHE Steering Committee Meeting

4 – 5 October 2023

Washington DC, United States

Announcements / New Initiatives *Costa Rica*

- Green hydrogen ecosystem remains fully operational
- Focus is 430 kgH_2/day Commercial expansion (developing the financial structure)
- Launched “CR Hydrogen School” with Estrategia Siglo XXI and Kellogg (Program uses existing ecosystem as a training facility)
- On June 28, 20213, AC Transit approved donation of 13 FC Buses to Costa Rica.

Announcements / New Initiatives *Costa Rica*

W.K. KELLOGG FOUNDATION

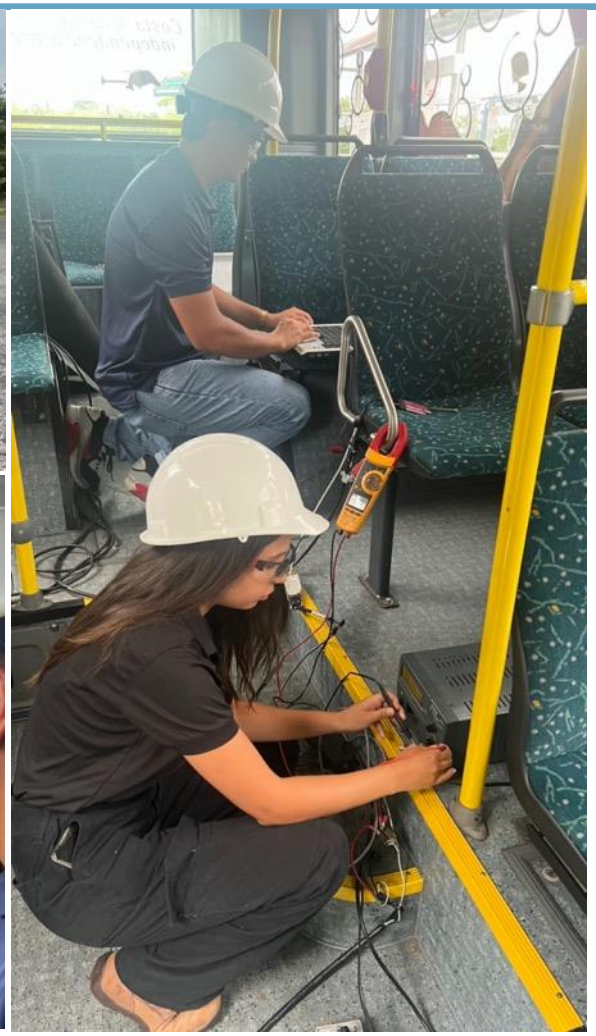
ESTRATEGIA SIGLO XXI
Declarada de Utilidad Pública en el 2013

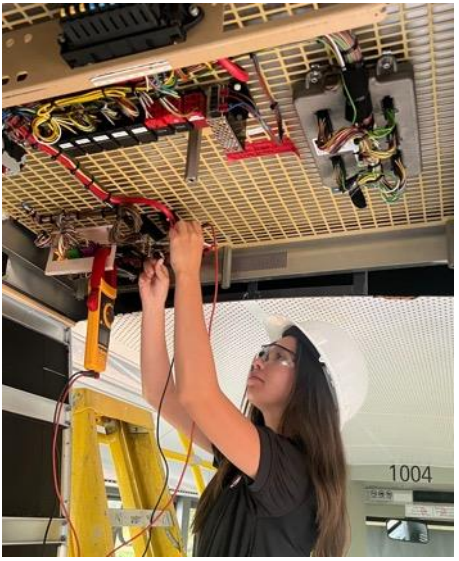
Servicios Energéticos™ y Ambientales
ASTRA

"The Hydrogen School"

(Youth-Focused Integrated Training Program on Green Hydrogen Technologies)

Announcements / New Initiatives *Costa Rica*





- Costa Rica's Hydrogen School started on September 4, 2023 at the Ad Astra facilities in Liberia, Guanacaste.
- Dayanara Navarro (21) and Jonathan Ramírez (19) are the first interns in the program
- Initial "pilot" program with WKKF is small (3-year, 2-3 students per semester)
- ESXXI is seeking additional funds to expand the program to 5-6 students per semester

Announcements / New Initiatives *Costa Rica*

- On June 28 2023, AC Transit BoD approved the donation of their retired fleet of 13 Van Hool A330 buses and their inventory of spare parts to CR NGO Strategy XXI
- Buses are identical to Costa Rica's NYUTI First H2 bus, so team has demonstrated experience in ops. maintenance and repair
- Vehicles will be used as training tools for the Hydrogen School and operate as part of ProNova's 1 MW commercial Ecosystem project.
- Plans are to start integrating these vehicles early next year

Lessons Learned and Impact *Costa Rica*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
• Special “Green Hydrogen” electric rate ($0.06 - $$0.04/kWh was officially published by the CR Gov on June 29, 2023 • Applies to grid users who ”exclusively” use the power for green hydrogen production • Ad Astra is first and only company that qualifies. • Final approval from the power company still pending • Presently, Ad Astra’s ecosystem self-generates much of its power, including for green hydrogen, uses the grid for energy storage	• With this electric rate, the present (1 MW) 430 kgH2/day commercial expansion model shows a 15% 10-y IRR • Approval is pending and could get bogged down in politics • Lesson: while higher CAPEX, self generation (wind and solar) may be preferable. It could produce even lower LCE and eliminate government uncertainty • Lesson: focus on small, self sustaining H2 ecosystems. Avoid government in critical path

Lessons Learned and Impact *Costa Rica*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
• CR officially published its Green Hydrogen Strategy	Lesson: Published July 2023. No major changes
• CR awaits decision by the Technical Support Unit (TSU) of the Mitigation Action Facility (MAF) on the 25M EUR fund for financing green H2 projects in CR. • MAF contributing donors are, UK Dept of E Security and Net Zero, German Fed Ministry for Economic Affairs and Climate Action, and the Children's Investment Fund Foundation	Lesson: Excellent potential but the long lead time makes it unlikely for decarbonization critical path.

Thank you

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for Hydrogen and Fuel Cells
in the Economy