

Hydrogen's Role in the Smart Transition

The generation that built the environmental industry grew up or came of age during an age of crises. The post-war prosperity of the 1950s gave way to the social unrest and environmental crisis that emerged in the 1960s. The 1970s brought the first energy crisis and the first in a series of botched efforts to come up with a national or global energy strategy or policy. AIDS in the 1980s; recession in the early 1990s and the Asian financial crisis and dot-com crash at the end of the 90s; September 11th and the specter of terrorism in the 2000s; the economic crisis of 2007-2009 and the 'great recession' and its aftermath leading into the covid-19 crisis of the 2020s.

But none of these crises, with the possible exception of the Cold War and nuclear obliteration, brought the existential threat of what is now widely referred to as the climate crisis. Even many of those that once called out a climate hoax now refer to the climate crisis and take advantage of, or propose and support policy to limit its impact in mitigation and adaptation & resilience.

So in 2024 a foundation for the energy transition has been clearly established and various scenarios for the sunset of fossil fuel combustion with free access to the atmosphere is a matter of 'when' and not 'if'. But the energy transition, though now inevitable, is increasingly seen as the need to be a 'smart transition' where government policy and private and public sector investment does not 'overdrive its headlights' and threaten economies, lifestyles, energy affordability, accessibility and equity across the world's 8.1 billion human beings.

So the success of the smart transition cannot be placed on one 'all-in' bet, but on *continued on page 3*

Hydrogen & the Smart Transition

The Energy Transition is not a linear process, and the climate change industry continues to operate in multiple layers of energy production, storage, distribution and efficient consumption, as well as the legacy issues. The promise of hydrogen as the simplest of molecules and perhaps the most challenging and perplexing of energy carriers has the clean energy world diving into hydrogen applications across all major energy categories. While too premature to quantify today's market in terms of revenues for equipment and services, few doubt a trillion-dollar future for hydrogen and other elements of the smart transition 1-7

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CIS Pioneers Community Partnerships in Water

Corvias Infrastructure Solutions LLC (CIS), is a national leader in the development and implementation of public infrastructure solutions, focusing on improving the environmental, economic, and social condition of the nation's infrastructure through solutions that drive local economic inclusion and equity, reduction of public risk, and increased community investment and buy-in. CIS also offers related advisory expertise and services on topics including nature-based solutions, climate resilience, disaster prevention, environmental equity/justice, green stormwater infrastructure, environmental finance, water affordability, and public trust. CIS has overseen the implementation of hundreds of green stormwater infrastructure projects totaling nearly \$450 million across the Mid-Atlantic, Great Lakes and West Coast regions.

Sanjiv Sinha, Ph.D., is the Chief Executive Officer & Board Member of CIS. In April 2023, Dr. Sinha took over CIS, spun-off from the **Corvias Group LLC**, to enable focused branding to leverage its pioneer status in water-sector, community-based partnerships centered on equity, innovation, and collaboration. In one year, staff has quintupled, the number of clients more than doubled, and new offices were opened in Milwaukee, Seattle, Ann Arbor, and near Philadelphia. Sinha also started an Advisory/Consulting Practice on climate resilience, disaster prevention, environmental finance, and justice. Dr. Sinha serves as the chairman of the Board of Directors of Delta Institute and as a member of U.S. EPA's Environmental Finance Advisory Board. Previously, he founded Resilient Infrastructure for Sustainable Communities, was the chairman of the Board of Directors for Alliance of the Great Lakes, on the Board of Advisors for Augment Ventures, and on the Board of Directors at Michigan League of Conservation Voters. Dr. Sinha worked for nearly 22 years at ECT, and left the firm as its Chief Sustainability Officer/Senior Vice President. Prior to ECT, Dr. Sinha was a management consultant at Booz Allen Hamilton, and before that, he was a visiting assistant professor at University of Michigan in Ann Arbor.

CCBJ: The community based public private partnership was a new model for you with Prince George's County. First, what distinguishes this from a usual P3 model people may be familiar with in the water/wastewater world, and how did the CBP come about and with leadership from what parties?

Dr. Sanjiv Sinha: A typical P3 model is a collaborative arrangement between government entities and private sector aimed at jointly delivering projects or services, leveraging the strengths and resources of both sectors to achieve common objectives. Thus, the focus of a P3 is on efficient execution, finance, and operations/maintenance (depending on the contract). In a P3 model, a private partner can also help reduce risk to the public sector, and a public entity can make payments contingent on the success of the program. Community-based partnerships (CBPs) retain all that but are also

entirely centered on a community's overall socio-economic-environmental benefit, by removing barriers to participation for local, small-, women- and minority-owned business enterprises (SWMBE), and by incorporating programs to grow local workforce capacity/jobs.

Nation's first CBP program, called Clean Water Partnership (CWP), in Prince George's County came out of discussions between the County and U.S. Environmental Protection Agency (EPA). To meet regulatory compliance needs, the County was interested in finding a way to reduce the risk of implementing a long-term, large-scale investment in green stormwater infrastructure (GSI) and wanted to find a way to maximize the benefits provided to the community. For instance, 51% of the hours worked within the program need to be performed by a certified citizen of the County, and 40% of the program cost

need to be awarded to certified small, local, women, minority-owned business Enterprises. Overall, CIS's CBP model is a remarkable innovation that has helped to deliver multiple benefits on a mega-scale, and now has a proven track record of nearly a decade.

CCBJ: The partnership has a long-term horizon of 30 years as you note, and an investment of over \$350 million from a start date around 2015, but with 215 projects already complete and expenditure of \$250 million, where will the additional capital come from to sustain partnership projects out the 30 years, and where did the original funding come from in the first place?

Sinha: The original funding for the project came from the Clean Water State Revolving Fund (CWSRF), which is being repaid with revenues from the County's stormwater utility fee. The County received low interest rates (25 percent of the market rate) since it meets the Disadvantaged Community criteria. Prince George's County continues to leverage CWSRF funding to finance its projects.

Going forward, the County can leverage local, state and federal grant programs to implement stormwater quantity/quality projects. These programs include: CWSRF funds via the Infrastructure Investment and Jobs Act, Water Infrastructure Finance and Innovation Act (WIFIA) loans, Sewer Overflows and Stormwater Reuse Municipal Grant Program (OSF), Federal Emergency Management Agency's BRIC (Building Resilient Infrastructure and Communities) grants, and U.S. Army Corps of Engineer's programs. In addition, state of Maryland funding opportunities can also be used to help advance local community interests.

CCBJ: One of the largest obstacles to stormwater infrastructure is the masses of impervious acreage in the watershed. What kind of percentages are we talking about in municipalities in the county and what kind of conversion rate did

you have to make in order to achieve a measurable difference in absorbability and less burden on the stormwater infrastructure?

Sinha: CWP's efforts began with a mandate to retrofit (4,000 impervious acres) over six years. CWP has identified, designed, and built retrofit projects to treat more than 4,000 acres of impervious area that was not treated before. In 2016, 13.5 percent (~ 41,000 acres) of the County's land area was covered by impervious surface. In other words, the program was designed to impact nearly ten percent of the 2016 impervious acreage.

CCBJ: What impacts were most measurable on the underserved communities in Prince George's County and how have you engaged with women and minority-owned businesses to complete the long list of projects and more community buy-in, as well as a foundation for future collaborations and funding?

Sinha: A challenge with any large-scale infrastructure investment is how to ensure that the local community actually receives the economic benefits. Often, communities do not have the local workforce capacity needed to meet ambitious goals for participation by local (county-based), SWMBE, and veteran-owned businesses. Finally, vertically integrated larger A/E firms have little incentive to distribute work in the areas they work in because they also need to keep their own employees busy.

By focusing on big-picture program management, CIS has had spectacular success on this topic. Over the last decade, we have helped mentor over sixty businesses via training to develop the skills to implement green infrastructure projects. Of the over sixty mentored companies, twenty-one have successfully competed for \$40 million in contract awards. At CWP, CIS has awarded 76% of contracts to local, SWMBE, and veteran-owned businesses, of which 54% of the hours (or over 508,000 hours) worked have been by county residents.

CCBJ: What was your original inspiration to get into this project and the environmental industry in the first place?

Sinha: CIS was formed to focus upon solving the challenge of climate adaptation in the urban core. If by "your", you mean me (Sanjiv), it has been my privilege to make a living leading a company that plays a pivotal role in climate adaptation by mitigating the impacts of extreme weather events such as floods and heatwaves. Incorporating green spaces like parks and urban forests helps regulate temperatures, improve air quality, and enhance overall resilience to climate change. By investing in green infrastructure, communities can bolster their adaptive capacity and foster sustainable development for a more resilient future. Honestly, I feel very lucky although luck has accompanied significant changes along the path and a lot of very hard, careful work.

CCBJ: Where did you grow up and complete your education, and what are the

most compelling pieces of evidence of environmental degradation and climate change that you have witnessed or experienced personally and professionally in your lifetime?

Sinha: I spent the first eighteen years of my life in Patna, the state capital of Bihar, in India. I have an undergraduate degree from Indian Institute of Technology (Roorkee, also in India), a Master's degree from University of Minnesota, and a PhD from University of Iowa. Regarding compelling pieces of evidence of environmental degradation and climate changes, they unfortunately are all around us! Rising temperatures and increased frequency of extreme weather events, such as heat waves and intense storms, are now published in popular media on a weekly basis. Everything feels different. But I believe it is solvable, with a clear focus, right priorities, and most importantly our perseverance. That is what we are trying to do at CIS. We owe it to our kids. ☀

CCBJ 2023 Award in Industry Leadership: Clean Water Partnership

Corvias Infrastructure Solutions (CIS) won a 2023 CCBJ award for the Clean Water Partnership (CWP), and its model urban green stormwater infrastructure program. Underserved communities have been disproportionately impacted by weather and climate disasters, and these programs leverage infrastructure investments to increase community resilience while addressing injustices, building the local workforce, and bolstering local economic development. The CWP is a partnership between Maryland's Prince George's County and CIS, and a first-of-its-kind, community-based public private partnership (CBP3) as a socio-economic solution to delivering climate resiliency at scale. Through this 30-year partnership, the county is investing over \$350 million in total development costs, and as of December 2023 CIS has completed 215 projects totaling over \$250 million. In 2014, Prince George's County was faced with an enormous regulatory challenge in the management of its National Pollutant Discharge Elimination System and its Municipal Separate Storm Sewer System (MS4) Permit. Traditional project delivery methodologies and procurement could have been utilized; however, given the magnitude of the challenge of retrofitting 2,000 impervious acres with green infrastructure, with the flexibility to potentially grow to 15,000 acres of untreated impervious area by 2025, and an estimated cost of \$100 million, an alternative solution was sought. Over the last seven years, 54% of hours worked have been by county residents, and nearly 80% of work has been done by local, women, and minority-owned business entities (WMBE), with CIS mentoring over 60 WMBEs.

