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Leadership in the Heartland: Acting Locally for Positive Global Change

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Acting Locally for Positive Global Change

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Threats to both domestic and to international security; the existential threat of climate change; loss – both real and threatened – of democratic governments amid a growing rise of populism and gerrymandering to weaken equitable representation; loss of reproductive rights; mass shootings; and the lack of common-sense gun regulation are all major challenges of today. These issues are being addressed by individuals and organizations alike — many of whom are in, or operate from, America's heartland.

U.S. Global Leadership Coalition (USGLC)

Things are being done in the heartland which are impacting the world. President and CEO of the United States Global Leadership Coalition (USGLC), Liz Shrayer, explained disturbing threats both nation- and world-wide, and issued a clarion call to action. During a USGLC conference on October 30, 2023 in Indianapolis, Indiana, Shrayer said:

> *Are we prepared meet the moment? The reason I'm really worried is because I see a trend. I see a trend all across this world that we're turning inward. …the populist trends are happening around the world. There's always been a fringe populism, but these parties are becoming mainstream. [An Economist article] lists 20 countries around the world where these parties are no longer fringe: they're now in Germany and France and Italy and Portugal and Chile and and Finland and Sweden. They are now taking 15-20% of the polls. And it's not just around the world; it's here in the United States. And what is it? It's afraid of "the other." It's turning inward. It's saying, 'we don't want to be engaged in the rest of the world' – whether it's immigration or trade or aid…What are we doing about it? Are we ready to be engaged with the rest of the world? Are we going to listen to the lessons of 9/11 or even going back further, World War I (Shrayer, 2024)?*

Shortly after this address, far-right populist Javier Milei, won the run-off election for president of Argentina. One of the first orders of business was to silence the media as Vladimir Putin

has been doing in the Russian Federation for decades. As *Forbes* recently reported, Milei has ramped up his attacks against the media "ripping a page out of Donald Trump's playbook one of which has proven so effective for leaders of the new 'Global Right' political movements across the globe. Given the tenacity of the president, his attacks are particularly pernicious as a consequence of his reach, especially on social media, and his capacity to inflict harm given the importance and perceived power of the office he holds (Fontevecchia, 2024).

And on June 9, 2024, the AP reported that far-right parties had made significant political gains throughout the European Union. EU Commission President Ursula Van der Leyen's party of the Christian Democrats had already shifted further to the right on topics of immigration and climate change (Casert et al., 2024).

Shrayer continued:

What's more dangerous about this moment than then is that we have things called social media. We have misinformation and it gets exacerbated so much more. When I watched the terror of Hamas…these are all interconnected. Russia immediately started isolating their attack on Ukraine. China was holding a conference on its 'Belt and Road' Initiative. So what do I think about the national security emergency supplemental? …To me, you can't do one without the other, because these are part of the national security emergency package as they are all interconnected. If we just take care of the situation in Israel, Putin and Xi Jinping and Khamenei are watching…. [We must] *speak up and speak out about the importance of being engaged in the world and be dedicated to the importance of having the tools like development and diplomacy alongside defense because these are the tools that make a difference to keep our walls safe and keep … the future safe. Global stability really is about America's stability* (Shrayer, 2023).

So who are the leaders attempting to meet these challenges? Several institutions, government representatives, and business heads appear to be leading the charge.

Think Globally, Act Locally — Progress in the Heartland

Zero-Emissions Infrastructure Plans for the Interstate 80 Midwest Corridor

Cummins, Inc. and ***Purdue University*** were awarded a $1.25-million grant from the U.S. Department of Energy to develop action plans for zero-emission infrastructure along the I-80 Midwest corridor. The plans are to focus on near-term (deployment plan of fleet electrification charging by 2025) and longer-term (>2035) electrified infrastructure and alternative fueling solutions for heavy-duty commercial vehicles — all geared to improve air quality for

communities near the I-80 interstate (DOE Press Release, 2023).

The Interstate-80 Corridor supports heavy-duty vehicles (HV), medium-duty vehicles (MV), and long-haul freight which contribute a significant amount of carbon emissions, resulting in poor air quality in adjacent communities that are adjacent to the highway. While there has been progress in electrifying transportation for light-duty vehicles (Hawkins, 2024),[1] the challenge the Purdue and Cummins teams will address is how to transition to electrification of the larger vehicles generating higher levels of pollution and move closer to Zero-Emissions Vehicles (ZEV).

The corridor project represents one of two that involve teams from the National Science Foundation ASPIRE Engineering Research Center that received DOE funding for EV infrastructure planning to help the nation move closer toward zero emissions. A second project, titled Wasatch Front Multimodal Corridor Electrification Plan, is being spearheaded by Utah State University and ASPIRE teams "to develop a community, state, and industry action plan to improve air quality in communities most impacted by high-density traffic in the greater Salt Lake City region" (DOE, 2023).

[1] Amazon has already deployed 50 battery-electric heavy-duty trucks in California, purportedly the largest such fleet in the USA. The company says the new trucks further its mission to eliminate pollution from its global operations — "even as its carbon emissions have spiked in recent years."

The Interstate-80 Corridor project team has been charged to develop a two-phase deployment and infrastructure plan to meet the goal of zero emissions for the region. The first phase concerns a deployment plan that focuses on high-power, in-route, EV charging to support battery-powered, fleet electrification by 2030.The team will use existing transportation data provided by the Indiana Department of Transportation (INDOT) to evaluate the impact of new electrification technology on mobility, energy use, and emissions (Purdue, 2023).

The second phase involves a longer-term commitment and will explore what electrifying the corridor would look like in the near future. The team will compare advanced infrastructure technologies, including fast-charging EV systems, hydrogen refueling, and dynamic wireless power transfer, through "electrified roadways," to help improve the sustainability of the corridor's infrastructure (Purdue, 2023).

Cummins, Inc.

"Power with Purpose: Destination Zero" describes the direction Cummins is attempting to follow. It has pursued the development and use of a renewable natural gas, or RNG, in the same category of biomethane or upgraded biogas. Biogas is produced when organic matter is dumped at landfills and ferments spontaneously, generating emissions which account for nearly a fifth of the human-caused methane emissions in the United States, according to the Environmental Protection Agency (Jhawar. 2022). Although anaerobic digestion breaks down bacteria into organic matter, additional refining removes contaminants including CO_2 and nitrogen to produce renewable natural gas. Cummins applies this process to use in an engine:

> *When used in an engine, natural gas has similar performance characteristics compared to diesel, but is quieter and much cleaner. Its simplified aftertreatment systems result in near zero NOx levels. Natural gas, however, remains a fossil fuel and its use always results in CO2 emissions. The carbon content of RNG, in contrast, is non-fossil. Burning RNG is thus carbon-neutral ….* (Jhawar, 2022).

As RNG – or biomethane – qualifies as an Advanced Biofuel under the renewable fuel standard in the United States (DOE, 2024), it can be used to fuel farm vehicles in addition to diversifying agricultural economies. Although Cummins has historically been associated with diesel-propelled engines, RNG vehicles are low-carbon and in commercial applications, may be a widely used alternative fuel with respect to medium- and heavy-duty trucks (Cummins, 2023). And as Cummins Inc. is a leading global designer, integrator, manufacturer, and distributor of exhaust "after-treatment" systems and components, the government inevitably made a deliberate choice in selecting Cummins as a planning partner to assist in the clean-up of the I-80 Corridor.

Commenting on the corridor project, John Kresse, director of advanced electrification technologies at Cummins, added: "Infrastructure to support zero-emissions commercial vehicles is one the biggest challenges to market adoption…Cummins is interested in understanding and helping improve access to this infrastructure (EV charging and H2

refueling) for our fleet customers" (Purdue, 2023). Kresse elaborated on the project, emphasizing that "The professors and graduate students from Purdue have experience in EV charging through their ongoing work with the ASPIRE NSF-funded research center and the INDOT-Purdue dynamic wireless power transfer project,,,. We have confidence in their ability and in their existing relationship with INDOT, who is also a partner on the project. Plus, this work is focused on I-80 in the Midwest and highways in Indiana, so it helps to have a local university directly involved" (Purdue, 2023).

Purdue University - Mung Chiang, President[2]

At the USGLC Conference in Indianapolis in 2023, Purdue University President Mung Chiang emphasized that combatting the world's major challenges often comes down to local action, programs, and policies and must highlight innovation and creativity. In this manner, Chiang explained that Purdue retained its ranking as a top 10 "Most Innovative Universities in the U.S." and is a "leading university in our state" by winning the hydrogen hub designation from the Department of Energy (DOE); housing the microelectronic workforce development center funded by the Department of Defense (DOD); and recently becoming a national biotech hub in pharmaceutical manufacturing (USGLC-Chiang, 2023).

In addition to Cummins and INDOT, Purdue's project team is collaborating with several community, education, and metropolitan-planning organizations to understand how an electrified infrastructure will impact regional districts. Brandon Allen, associate research faculty in engineering education at Purdue and project member explained that: "Some of the things we focus on are community engagement and looking for ways electrified transportation systems can be beneficial to communities who are often marginalized, underserved, or minoritized … "We want to think about who has access to charging stations and the environment and air quality. We can't do these solutions without community involvement and educating the workforce, so we're hitting both sides of the aisle. It's a holistic approach" (Purdue, 2023).

Government Legislation and Administrative Policies

U.S. President Joe Biden's *Bipartisan Infrastructure Law* (2021) and the *Inflation Reduction Act of 2022* have provided billions in funding to repair bridges and roads, replace lead piping networks, upgrade ports and airports, expand broadband access, and invest in public transit including Amtrak. In 2022, repairs had begun on 65,000 miles of roads and 1,500 bridges. As part of the Bipartisan Infrastructure law, the Biden-Harris Administration has made the largest investment in clean energy transmission ever. In addition, the law allocated billions to clean up abandoned mines and oil wells, fund research of next-generation clean energy technologies, build zero-emission public transit, and create a national network of EV charging stations. The infrastructure law also invests billions to protect Americans from droughts,

[2] Chiang took over from Mitch Daniels on January 1, 2023, making him the 13th president of the university since it was founded in 1869. Chiang previously served as Purdue's dean of the College of Engineering).

hurricanes, tornadoes, fires, and floods while moving the country closer to national climate objectives.

So how has this been translated into real action locally and regionally?

Hydrogen Hubs/MD-HD ZEV Infrastructure Planning

The Midwest Alliance for Clean Hydrogen (MachH2 — Illinois, Indiana, Michigan) is one of 7 national hydrogen hubs and an alliance committed to growing the Midwest regional hydrogen value chain to deliver positive climate and community impact. Recognizing that hydrogen has the potential to transform transportation in the Midwest and throughout the country, the federal government has tapped into this potential. Already, MachH2 alone has received $1 billion of federal funds (DOE, 2023).

Located in a key U.S. industrial and transportation corridor, the Midwest Hydrogen Hub will enable decarbonization through strategic hydrogen uses "including steel and glass production, power generation, refining, heavy-duty transportation, and sustainable aviation fuel. This Hydrogen Hub plans to produce hydrogen by leveraging diverse and abundant energy sources, including renewable energy, natural gas, and low-cost nuclear energy. The Midwest Hydrogen Hub anticipates creating 13,600 direct jobs—12,100 in construction jobs and 1,500 permanent jobs" (DOE, 2023).

Statewide Action

Another speaker from the Heartland at the 2023 USGLC Conference in Indianapolis, was Senator Todd Young, Indiana's Senior Senator. First elected to the Senate in 2016, Young serves on the Senate's Foreign Relations Committee as well as the Commerce and Science, and Small Business and Entrepreneurship committees. Young emphasized that with the continuing wars in Ukraine and between Hamas and Israel, and in the aftermath of the pandemic and a compromised supply

chain, the U.S. is being reconstructed with a new emphasis on local tax credits, clean energy generation, and domestic manufacturing. And Indiana is an example of these efforts (USGLC — Young, 2023).

To date, Indiana's electric utilities have been offering a variety of incentives to encourage residential and commercial entities to adopt electric vehicles (EVs) and deploy electric vehicle supply equipment (EVSE). Such incentives include grants, loans, rebates, and time-of-use (TOU) – all designed to increase EV adoption. These incentives are focused on increasing customer engagement, lowering initial capital costs, and promoting sustainable load growth. Funded through the National Electric Vehicle Infrastructure (NEVI) program, Indiana's effort feeds into a national initiative to create a network of at least 500,000 reliable chargers across the U.S. to support the growing adoption of electric vehicles (INDOT, 2024).

Charging the Crossroads is the Indiana Department of Transportation's plan to invest $100 million to install a network of EV charging stations at strategic sites along Indiana's federally-designated alternative fuel corridors (AFCs). Funded by the *Bipartisan Infrastructure Law* through the NEVI program, *Charging the Crossroads* is scheduled to result "in the placement of Level 3 DC Fast Charging stations every 50 miles and within one mile of interchanges and intersections" (INDOT, 2024).

Comprised of the Indiana Department of Environmental Management (IDEM), the Indiana Utility Group, and Drive Clean Indiana, ***GO Electric Vehicle INdiana*** (GOEVIN) is a statewide initiative dedicated to advancing the adoption of EVs across the state. GOEVIN's primary purpose is "to furnish consumers with information on the benefits of driving EVs in Indiana. Indiana's statewide EV charging network" (GOEVIN, 2024).

The Indiana Utility Group, comprised of 8 Indiana utilities, was successfully awarded a contract to develop Indiana's fast-charging corridors. As part of the GOEVIN initiative, the Indiana Utility Group "will deploy 61 Direct Current Fast Chargers (DCFC) along Indiana's major highway routes. The GOEVIN DCFC chargers will be publicly available and located no more than one mile from highway exits (GOEVIN, 2024).

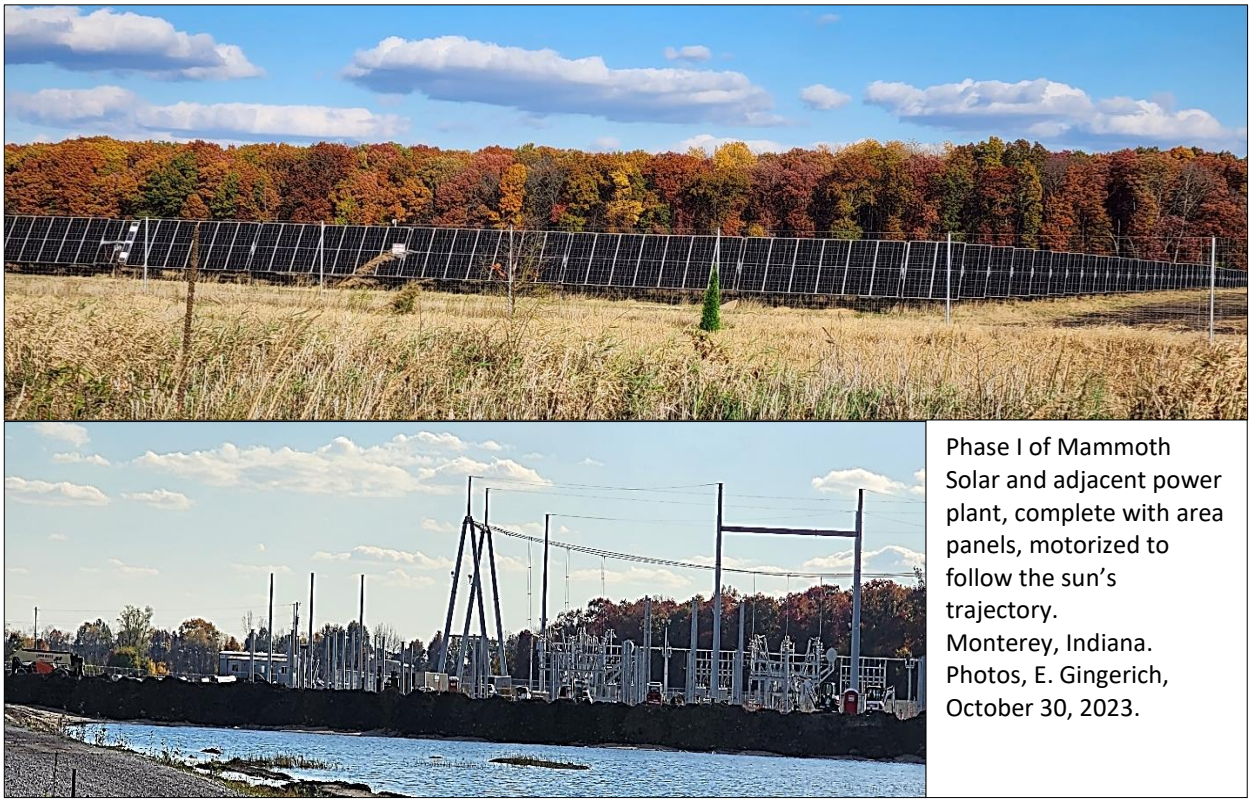
Energy Sources

Mammoth Solar

The country's biggest solar farm – and the projected third largest in the world – is being constructed in one of the coal-friendliest states – Indiana. Among vast fields of corn and soybeans in rural northwest Indiana, construction workers broke ground in October in 2021 on what will be the largest solar farm in the United States. The project, known as Mammoth Solar, will cover 13,000 acres, is being spread across two counties (Starke and Pulaski), with 60 landowners involved (Dolar Renewables, 2024). According to Jena Brooker of *The Grist* reporting in 2022, the final project will generate "enough electricity to power nearly a quarter-million homes in an area with deep ties to the fossil fuel industry. Indiana has ranked in the top 10 states for carbon emissions, both overall as a state and per capita usage. In 2020, Indiana used the third most coal in the U.S., after Texas and Missouri." After decades of reliance on coal as a primary fossil fuel used for heating, Indiana's power system has been facing costly upgrades to its aging infrastructure. Four of the state's electric utilities had already announced plans to close their coal-fired plants before the end of the decade. With the declining cost of solar, many utilities and developers had decided that construction of

solar facilities “was a better investment than new coal plants or even retrofitting old ones” (Brooker, 2022).

This major transitional move does not come so much from an overwhelming sense of altruism and respect for the planet; rather these small rural counties that are functioning as landlords to these new solar facilities, are simply financially grounded. The tax revenue from the 1.65-gigawatt project will account for nearly one-fifth of each of the annual budgets for Starke and



Phase I of Mammoth Solar and adjacent power plant, complete with area panels, motorized to follow the sun’s trajectory. Monterey, Indiana. Photos, E. Gingerich, October 30, 2023.

Pulaski counties and for many individual landowners, the payments issued by Doral Renewables will exceed farming revenue. In total, Mammoth Solar is expected to generate over $1.5 billion in investment to the state. And according to Nick Cohen, president and co-founder of Doral Renewables, this business partnership targeted Indiana as a state that has a competitive advantage for solar with respect to it flat topography, the established grid and transmission lines system, and its accommodating rural setting (Dolar Renewables, 2024).

Fowler Ridge Wind

Indiana boasts one of the world’s largest onshore windfarms. Fowler Ridge I, II and III wind farms span over 42,000 acres with 355 wind turbines and a capacity of 600MW, enough power to support 122,000 homes in Indiana. The Fowler Ridge IV wind farm generates 150MW with 65 turbines and can power 46,000 homes a year. The Fowler Ridge 1 and 3 wind farms are 100% owned by BP as of the end of 2023 (Power Technology, 2023).

Automobile Manufacturing

Subaru

Based upon travel, plant visits, interviews, and research, foreign car manufacturers are seeing the light with respect to relocating manufacturing sites to the U.S. to eliminate most polluting shipping segments and almost all vehicle manufacturers are committing to EV development

and production. In a general conclusion, Kia dominates Georgia, BMW — South Carolina, VW — Tennessee, Ford — Kentucky, GM — Ohio, Rivian — Illinois, Tesla in California & Texas, Hundai/Honda/Toyota/Mercedes-Alabama….and Subaru (Japan-based automaker, partially owned by Toyota Motors) — Indiana. In addition to the Solterra EV SUV, Subaru appears to be ramping up its efforts to release at least 3-4 new SUVs in the near future. The only problem is that these will most likely be manufactured in Japan – still necessitating the cross-Pacific and over-ground transportation segments. With battery generation in Ohio, Kentucky, and Illinois and with Indiana's claim to becoming the renewable energy capital in North America per square mile, Subaru will undoubtedly be part of this sustainable transition. One of the many incentives for Subaru is that since the automobile manufacturer expects that 40% of its sales from will be EVs, if produced in Japan, they would not be eligible for the tax credit given under the *Inflation Reduction Act of 2022*. "Subaru sees the years to 2028 as a key period for building up its EV sales so that it will eventually hit an annual sales target of 600,000 battery-powered vehicles by 2030 that will make up half of its global sales…It aims to sell 400,000 of those in the United States" (Shiraki, 2023).

Adding to the speculation of enlarging its EV manufacturing capacity in Indiana, the state's Governor Eric Holcomb has made several recent trade trips to Japan, making overtures to chief officers of Subaru (Schroeder, 2023).

According to Subaru, the company "works to reduce waste, safeguard resources for future generations, and preserve natural spaces – making real, meaningful commitments to these goals. All Subaru products are manufactured in zero-landfill production plants, and Subaru of Indiana Automotive, Inc. is the only U.S. automobile production plant to be designated a backyard wildlife habitat by the National Wildlife Federation" (Subaru, 2024). It would seem fitting, then, that Subaru enjoy the benefits of increasing its presence in the Heartland.

Conclusion

With the world's major challenges and increasing threats to international and national security, local and regional action advocating and incentivizing innovation and creativity must be emphasized. And Indiana is an example of such progress in the Heartland.

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