

ATTN: Amy Eberwein
Administrative Services Officer
Humboldt County Association of Governments
611 I Street, Suite B
Eureka, CA 95501

April 11th, 2025

Dear Ms. Eberwein,

On behalf of RMI, I am pleased to submit our proposal for the *Siting Analysis for North State Hydrogen Fueling Station Network*. We are enthusiastic about the opportunity to support HCAOG in developing a data-driven, stakeholder-informed strategy to deploy hydrogen fueling infrastructure that meets the unique transportation needs of the North State region.

RMI brings extensive experience in transportation infrastructure planning, decarbonizing fleet vehicles, and hydrogen network development. Our team applies advanced data science, geospatial modeling, and a collaborative project delivery approach to create actionable roadmaps that align with state and regional decarbonization goals. For this project, we will build on existing planning efforts and integrate operational, economic, and environmental factors to deliver a robust siting analysis that supports long-term infrastructure investment and implementation.

This proposal outlines our technical approach, team qualifications, and commitment to delivering high-quality, timely, and impactful work. We are particularly excited to collaborate with HCAOG and regional stakeholders to ensure the analysis reflects local context, advances equity, and positions North State communities to benefit from a clean transportation transition.

This proposal is a firm offer for a period of at least sixty (60) days. I am authorized to negotiate and bind RMI in matters related to this proposal. Please feel free to contact me directly at **lguccione@rmi.org** with any questions or for further discussion.

Thank you for your consideration. We look forward to the opportunity to support HCAOG on this important initiative.

Sincerely,

Leia Guccione
Leia Guccione (Apr 11, 2025 08:35 MDT)

Leia Guccione
Managing Director, Carbon-Free Transportation, RMI
lguccione@rmi.org
2490 Junction Place, Suite 200
Boulder, CO 80301



Siting Analysis for North State Hydrogen Fuel Station Network

Project Proposal

Developed for Humboldt County Association of Governments



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Understanding of Project

Hydrogen fuel cell vehicle adoption in California is at an inflection point. For medium- and heavy-duty fleets operating across long distances and in rural environments, hydrogen is increasingly a viable zero-emission alternative. Yet, despite policy momentum and availability of fuel cell vehicles, a persistent infrastructure gap remains—especially in California’s rural North State.

This project addresses a core challenge: without a coherent and coordinated hydrogen fueling network, the North State region will remain disconnected from broader zero-emission vehicle adoption, undermining California’s climate and air quality goals and leaving rural transit and freight operators behind. The Humboldt County Association of Governments (HCAOG) has recognized that rural areas need a different approach—one that matches vehicle requirements to infrastructure feasibility and accounts for the realities of geography, land use, and regional economic constraints.

The goal of this project is to develop a siting analysis for a hydrogen fueling station network that supports a transition to fuel cell electric vehicles (FCEVs) across 16 rural counties north of Sacramento and the Bay Area. That network must bridge long travel distances, serve the operational needs of fleet and transit operators, and provide logical connections to existing and emerging hydrogen corridors

further south. It must also be sited with an eye toward land use constraints, grid access, and environmental and equity considerations.

We understand that the analysis must:

- Leverage and extend the Schatz Energy Research Center’s Medium- and Heavy-Duty Hydrogen Blueprint and findings from the Humboldt Transit Authority’s TIRCP-funded planning
- Identify realistic use cases and technical fueling needs based on vehicle operations
- Determine the number, type, and general location of hydrogen fueling stations
- Conduct a high-resolution micro siting exercise using GIS, zoning, traffic flow, and parcel-level data to identify promising locations
- Prioritize sites that align with Caltrans’ alternative fuel corridors and equity goals, particularly in disadvantaged communities
- Support near-term investment and long-term planning by producing public-facing deliverables, including maps, fact sheets, and outreach documentation

We also recognize that stakeholder engagement is critical. Tribal and rural transit agencies, freight companies, regional planners, and hydrogen industry experts all bring vital perspectives that must inform the analysis. Their input will directly shape assumptions around vehicle types, fueling needs, routing, and station design, and will ultimately determine whether the siting recommendations are viable and actionable.

We see this project not just as a siting study, but as a foundational step toward unlocking hydrogen transportation in the North State. Our team brings a data-driven approach to infrastructure planning that emphasizes feasibility, stakeholder alignment, and integration with policy and investment pathways. This analysis can lay the groundwork for public-private partnerships, attract grant funding, and catalyze station deployment that meets the operational and environmental needs of the region.

Consultant Qualifications and Experience

Firm:

RMI is an independent nonprofit, founded in 1982 as Rocky Mountain Institute, that transforms global energy systems through market-driven solutions to align with a 1.5°C future and secure a clean, prosperous, zero-carbon future for all. We work in the world’s most critical geographies and engage businesses, policymakers, communities, and NGOs to identify and scale energy system interventions that will cut greenhouse gas emissions at least 50 percent by 2030. With more than 700 staff, RMI has offices in Basalt and Boulder, Colorado; New York City; Oakland, California; Washington, D.C.; and Beijing.

RMI’s cutting-edge thought leadership, convening expertise, deep knowledge of the transportation space have made RMI a trusted partner to cities, states, utilities, regulators, alternative fueling companies, and others leading the way to new business models for the clean transportation future. RMI works with key stakeholders as a trusted and independent partner and thought leader—our unique

position outside of industry means RMI has no need to sell additional projects or equipment to our partners. RMI's Carbon-Free Transportation leverages these capabilities to accelerate the transition to clean mobility across all modes and use cases. The Transportation team's work showcases leadership in attacking structural barriers to charging (e.g., rates, costs, process chokepoints), industry insights from historical work with auto manufacturers, well-established skills and tools for shaping and driving effective stakeholder processes, and world class communications and educational capabilities.

There are no relevant fraud convictions, debarments, suspensions, or violations of regulatory requirements to disclose.

RMI does not hold a controlling or financial interest in any other firms or organizations

Firm's Qualifications:

This project team brings together a unique history of project experience planning alternative fueling infrastructure for medium and heavy-duty vehicles. Members of our Transportation team have also pioneered approaches for projecting demand and use of truck refueling infrastructure. RMI has developed and deployed data-driven approaches, in partnership with vehicle telematics providers like Geotab and Replica, to estimate demand from truck charging in each of the trucking market segments covered in this study. RMI has recently worked with the utility National Grid to estimate both electric truck charger and power needs as well as hydrogen refueling needs through 2050 at over 170 potential fast charging hubs in New York and Massachusetts. We have also developed methodologies to estimate which trucks will rely primarily on overnight domicile charging and how they will likely use that charging. Those methodologies were deployed on a county level in New York and on a separate US Department of Energy-funded project in California's Bay Area. RMI and Geotab are currently also working with the City of Los Angeles to project refueling needs for drayage trucks serving the port complexes in Los Angeles and Long Beach.

Subcontractor Qualifications

Optibus is a global leader in software innovation. Founded in 2014, we have established a strong presence across the globe with offices in New York, Portland, London, Berlin, San Sebastian, and Tel Aviv. Our regional teams ensure close collaboration with transit systems worldwide, enabling us to understand and address the unique needs of each market. In 2022 Optibus acquired Portland-based Trillium Solutions, Inc. Trillium's consulting, GTFS, and passenger information services and expertise continue on as part of Optibus's US West Coast team.

Transportation agencies and operators in large urban, small urban, and rural places around the world (including more than 6,000 cities) trust Optibus to increase operational efficiency, promote transportation equity, reduce emissions, accelerate fleet transitions, simplify transit for riders, and modernize operations. The platform has a proven, measurable ability to improve the quality of service and efficiency, reduce costs, and streamline overall operations.

We envision a more sustainable world where public transportation is the mobility mode of choice for everyone everywhere: more efficient for providers, more rewarding for drivers, and more reliable for passengers. The Optibus platform has been deployed at many US sites, including the following

agencies:



Current Optibus clients within this funding opportunity's 16-county project study area:

- Humboldt Transit Authority
- Lake Transit Authority
- Lassen Transit Service Agency
- Mendocino Transit Authority
- Modoc Transportation Agency
- Nevada County Transit Services
- Plumas Transit Systems
- Redding Area Bus Authority (RABA)
- Redwood Coast Transit Authority
- Tehama Rural Area Express (TRAX)
- Trinity Transit

Key Personnel:

[Dr. Lynn Daniels](#) – Technical Product Director, Carbon-Free Transportation

Joining RMI in 2014, Lynn is a Technical Product Director with RMI's Carbon-Free Transportation team, managing a broad portfolio of data science projects—including municipal and utility electrification

strategy, fleet and truck electrification, charging optimization, charging needs assessments, and mobility as a service and behavior change—and leads the team’s strategy to develop tools, products, analysis, and models. Lynn has advised cities, states, and utilities including Seattle City Light, Oregon Department of Transportation, and the City of Austin with both thought leadership as well as on-the-ground implementation of pilot projects. Prior to joining RMI, Lynn was a AAAS Science & Technology Policy Fellow at the U.S. Department of Energy for 3 years. During his Fellowship, Lynn was a program manager with the Advanced Manufacturing Office, leading implementation of a multi-agency economic development funding opportunity, and then technology advisor to the Assistant Secretary of Energy Efficiency and Renewable Energy. Lynn earned his PhD in Physics in 2010 from the University of Pennsylvania.

[Patrick Molloy](#) – Principal, Infrastructure & Ammonia

Patrick is a principal with RMI’s Climate-Aligned Industries Program, where he leads workstreams focused on ammonia and fertilizers, hydrogen infrastructure, and hydrogen system innovation. He focuses on deployment potential, system design, market evolution, and potential for disruption in next-generation traded markets. Patrick has been widely cited on next-generation technology emergence with particular focus on hydrogen applications in the industrial space. Previously, he worked with RMI’s Business Renewables Center, focusing on tax equity structures and PPA deal structures. Additionally, as part of RMI’s mining team, he led work on mine site remediation of on-site renewable resource development.

[Nick Pesta](#) – Senior Associate, Carbon-Free Transportation

Nick Pesta is a Senior Associate on RMI’s Carbon-Free Transportation team. His work primarily falls under the team’s Mobility Grid Interface initiative, where he focuses on planning and deploying infrastructure to support clean vehicle operation. He leads project management for GridUp, RMI’s load forecasting tool that projects charging demand from electrified fleets. Nick also is leading the development of a regional truck electrification roadmap for the Bay Area, helping public agencies and stakeholders plan for high-impact, data-driven investments in zero-emission freight infrastructure.

[Mia Reback](#) – Manager, Industrial Decarbonization

Mia is a manager in the Climate Aligned Industries team, working to decarbonize heavy industry and transportation. Mia manages RMI’s Clean Industrial Hubs program which brings together diverse stakeholders to enable region clusters of decarbonization. Previously, Mia was a senior associate in RMI’s Urban Transformation Program, which focuses on helping cities around the world simultaneously reduce emissions, enhance urban livability, increase resilience, and advance social equity. The program offers cities targeted technical assistance, capacity building, analytical capabilities, and facilitation support to help them turn their climate and environmental justice commitments to action.

[Dr. Kirill Tchernyshyov](#) – Senior Data Scientist

Kirill Tchernyshyov is a senior data scientist on RMI’s Carbon Free Transportation team, where he analyzes the effects of technology adoption to support the transition to a climate-friendly transportation sector. His work includes algorithm development for deriving infrastructure impacts from vehicle travel patterns and data pipeline building for travel mode shift calculations. Prior to joining RMI, Kirill designed statistical methods for studying the universe as an astronomer and Data Science Postdoctoral Fellow at the University of Washington. He earned his PhD in Physics and Astronomy from Johns Hopkins University in 2019.

[Kate Hickey](#) – Senior Associate, Infrastructure & Hydrogen

Kate is a senior associate in RMI's Climate-Aligned Industries Program, supporting the adoption of clean hydrogen across hard to abate sectors. At RMI, Kate focuses on connecting suppliers with end-users of clean hydrogen and enabling development of the critical midstream infrastructure required to unlock investments. Prior to joining RMI, Kate worked as a clean fuels analyst for HTEC, supporting a small team in building clean hydrogen production and liquefaction facilities and distribution networks for transportation users in Canada. Kate brings her experience in techno-economic analysis, project management, and business development from previous roles such as clean energy consultant, bioproduct business analyst, and sustainability office intern.

[Dr. Nocona Sanders](#) – Senior Associate

Nocona is a senior associate in RMI's Carbon-Free Transportation team, where he supports electrification efforts for medium- and heavy-duty vehicles. Nocona previously worked at Gladstein, Neandross & Associates, a clean energy and transportation consulting firm, where he used analyses on total cost of ownership, greenhouse gas emissions inventories, and fleet energy use profiles to support the deployment of electric vehicles and their charging infrastructure. At University of Michigan, Nocona studied materials for energy-efficient LEDs and high-power electronics.

[Hamid Zoraghein](#) – Senior Data Scientist

Hamid is a senior data scientist in the RMI's Carbon-Free Transportation team. He will be working with National Grid and other utilities and government stakeholders on a Northeast US freight charging roadmap and supporting other data science efforts to accelerate electrification of vehicles. He is interested in using data science, machine learning, and geospatial analysis to respond to challenges in climate change mitigation and adaptation efforts.

Hamid is trained in geospatial analysis at the University of Colorado Boulder and has previously worked at the National Center for Atmospheric Research (NCAR), University of Denver, and Population Council. Prior to joining RMI, he worked on generating long-term scenario-based projections of population composition and spatial distribution using demographic models and geospatial analysis.

[Aaron Antrim](#) - Optibus

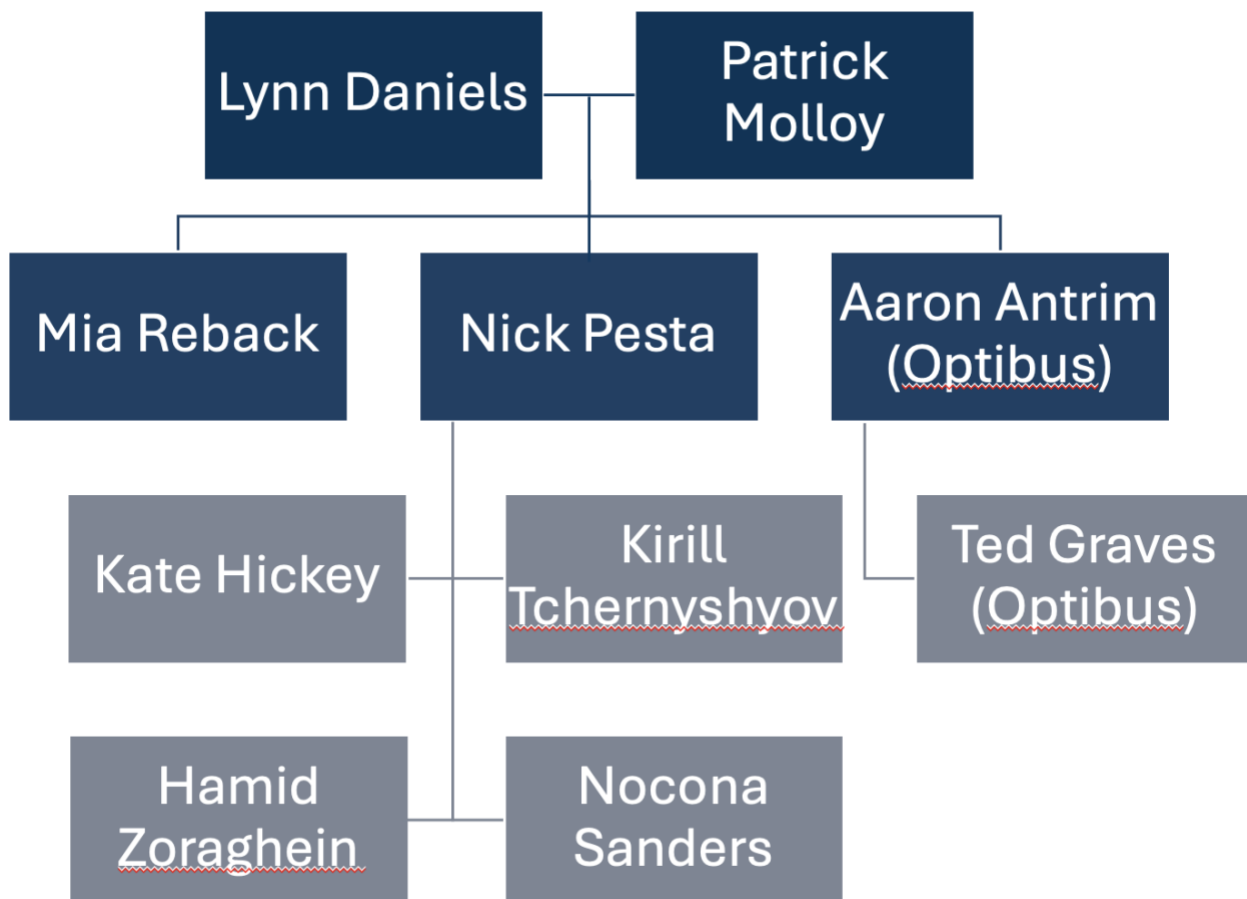
Since 2007, Aaron has worked as a dedicated transit professional. Along the way he founded Trillium, originally an Arcata-based company (later Portland-based), which continues its work supporting transit agencies and departments of transportation as part of Optibus today. Aaron also co-founded MobilityData, the organization that supports interoperable transit data, including GTFS. He provided technical support to RMI to incubate the early stage Interoperable Transit Data Consortium Program which became MobilityData. Aaron believes in the goals of public transit, and works to improve efficiency and usefulness of transit in every project.

[Ted Graves](#) - Optibus

Ted Graves is the Head of Implementations for North America and Australia/New Zealand (ANZ) at Optibus. He leads implementation teams and manages resource allocation, bridging client needs with product roadmap direction. Previously, he served as a Customer Success Team Lead at Optibus, managing client onboardings and relationships. Ted has a background in data analysis and

transportation planning, with roles at Bird, the Metropolitan Transportation Authority, and the National Association of City Transportation Officials. He holds a Master of City Planning in Transportation from the University of California, Berkeley.

Project Team Organizational Chart



Lynn is the Principal/Technical Product Director overseeing the total project scope. He will provide guidance on overall analysis structure from his experience on numerous similar infrastructure siting projects. Patrick will perform an advisory role with his experience on hydrogen-specific applications.

While the exact staffing on the project will depend on individual personnel availability, there are two main roles that will be filled in this project. Each staff member being listed is highly qualified to complete the relevant work.

The first is a project manager (PM) responsible for day-to-day project management, engaging with stakeholders and drafting the output memorandums. The PM role will be filled by a combination of Nick, Mia and/or Hamid. As part of their project management responsibilities, they will serve as the first point of contact for HCAOG to provide any deliverables or field any questions for the project team. They

will work with HCAOG to establish check in meetings as described in the Approach and Work Plan sections below.

Kirill, Kate and/or Nocona will perform RMI's analytical tasks. They each bring deep subject matter expertise on many relevant fields including transportation data analysis, heavy-duty vehicle operations, and hydrogen infrastructure development and siting. They will work alongside Aaron and Ted from the Optibus team, who bring in additional expertise in transit operations and preexisting working relationships with several of the transit agencies in the North State region.

References

RMI

Client: Washington State Department of Commerce

Contact: **Steven Hershkowitz**

Managing Director, Clean Transportation Unit, Energy Division

steven.hershkowitz@commerce.wa.gov

Cell: (360) 688-4006

Project Work: RMI engaged with Washington's Department of Commerce to develop a statewide Transportation Electrification Strategy (TES). The TES was a roadmap for the technical and policy changes Washington state needed to make to meet its ambitious EV adoption goals. RMI performed a statewide vehicle adoption and charging demand model with detailed county level outputs. We also developed a menu of policy options the state could consider to speed clean vehicle adoption. In parallel, our team engaged with other stakeholders in state government and in the broader community to incorporate feedback into our work and share our findings. The work began in January 2023 and was successfully completed in November 2023.

Project Personnel: Ben Shapiro, Aradhana Gahlaut, Gerard Westhoff, Nick Pesta, Nocona Sanders.

Client: National Grid

Contact: Brian Wilkie

Director, NY Transportation Electrification

Brian.wilkie@nationalgrid.com

Cell: (929)-275-5327

Project Work: RMI was brought in as a subcontractor to support National Grid, a large investor-owned utility operating in New England and the Mid-Atlantic region, to identify hotspots for alternative vehicle refueling along major freight corridors in the utility's service territory. RMI provided detailed analysis of the vehicle traffic in the region to determine the energy demand and sizing requirements for the proposed sites. This work was initiated in March 2022 and the analysis portion of the project was completed in December 2024.

Project Personnel: Lynn Daniels, Hamid Zoraghein, Pranav Lakhina

Client: Los Angeles Department of Water and Power (LADWP)

Contact: Haik Movsesian

Address: 111 N. Hope St, Los Angeles, CA 90012

Phone Number: 213-367-3936

Email: haik.movsesian@ladwp.com

Work Period: Fall 2024

Project Personnel: Ari Kahn, Nocona Sanders, Gerard Westhoff

We used telematics data to analyze the driving behavior, dwell times, and domicile locations of medium- and heavy-duty vehicles across the City of Los Angeles. We then used this data to forecast city-wide 2030 power loads at 1/4 square mile resolution under varying charge management strategies, pinpointing where trucking loads will be the highest as fleets electrify and what the anticipated grid impacts will be. In parallel, we assessed the economic value of smart charging, concluding that smart use of managed charging and DERs can save an EV fleet as much as 30% on their electricity bills while also reducing strain on the local grid.

Optibus

Client: Humboldt Transit Authority (HTA)

Contact: Greg Pratt, General Manager

(707) 443-0826

greg@hta.org

Jerome Qiriazzi, Transit Planner

707-443-0826 x112

jerome@hta.org

133 V St., Eureka, CA 95501

Project Work: HTA is a current user of Optibus Planning & Scheduling Software. They are the first (and continuing) customer of acquired Trillium's original GTFS and passenger information products for trip planning, website, interactive map and alerts. There are two main workstreams, both of which are ongoing –Optibus Planning & Scheduling which began in 2023; and Passenger Information, which began in 2008

Optibus staff: Aaron Antrim, Kal Wilson

Client: Antelope Valley Transit Authority (AVTA)

Contact: Geraldina Romo, Planning Manager

(661) 729-2278

gromo@avta.com

42210 6th St. W., Lancaster, CA, 93534

AVTA has used Planning, Scheduling and Modules for Electric Vehicles to perform planning, EV blocking, runcutting, and rostering for their all-electric fleet. This work began in 2019 and is ongoing.

Optibus staff: Kal Wilson, Ted Graves

Approach

Our project team will develop a rigorous, data-driven siting analysis for hydrogen fuel stations in California's North State region. Our approach builds on existing regional planning efforts and integrates best practices from hydrogen and zero-emission infrastructure planning work we have done across the United States. By grounding the analysis in real-world operational needs, stakeholder insight, and spatial feasibility, we will produce an actionable and technically sound siting roadmap for medium- and heavy-duty vehicle hydrogen fueling infrastructure.

Task 1: Kickoff & Coordination

The project will begin with a structured kickoff to align on scope, priorities, and engagement strategy. This phase will establish the project's cadence and foundation for collaboration. We will define analytical inputs and decision points, confirm the project timeline including key deliverables and associated dates for completion, and formalize coordination protocols with HCAOG and Caltrans.

Key Actions:

- Convene a kickoff meeting to verify project goals and timeline
- Establish a shared task management and communication structure
- Develop templates for meeting notes, progress reports, and deliverable tracking

We will coordinate closely with HCAOG staff throughout the project, providing regular updates and using project check-in meetings to flag decision points and maintain alignment with stakeholder expectations and regional goals.

Task 2: Stakeholder Engagement

Effective stakeholder engagement is critical to ensuring the siting analysis reflects the real-world operational needs, policy priorities, and regional equity goals of the North State. Our team brings extensive experience in stakeholder coordination, particularly in rural and under-resourced regions. In this task, we will establish a structured, repeatable process to gather critical insights and co-develop the analytical foundation of the siting plan.

2.1 Stakeholder Engagement Plan

We will begin by preparing a detailed stakeholder engagement plan that clearly outlines:

- A comprehensive contact list of stakeholder organizations, including regional transportation planning agencies (RTPAs), transit agencies, Tribal transportation commissions, freight operators, and state-level partners.
- Proposed methods and cadence of engagement, tailored to stakeholder type—e.g., direct interviews for fleet operators, standing meetings with public agencies, and email updates or webinars for broader coordination and stakeholder awareness.
- A structured protocol for documenting and responding to stakeholder feedback, ensuring that all inputs are acknowledged, cataloged, and, where appropriate, incorporated into the technical analysis.
- A consolidated list of data and insights to be requested from stakeholders, including planned fleet transitions, routing and facility information, land use constraints, and anticipated rates of hydrogen adoption.

The draft engagement plan will be reviewed and refined in coordination with HCAOG staff.

2.2 Regional Project Kickoff

To launch the engagement process, we will facilitate two initial regional meetings: one at the North State Super Region (NSSR) and one with the North Coast Tribal Transportation Commission (NCTTC). These meetings will:

- Communicate the purpose and scope of the siting analysis
- Outline the proposed stakeholder engagement plan and seek feedback
- Clarify what information will be requested from participating agencies and operators
- Establish points of contact and preferred communication channels

Our team will prepare facilitation guides, slide decks, and supporting materials tailored to the audience of each meeting. All stakeholder comments will be documented and synthesized into the revised engagement plan.

2.3 Post-Kickoff Revisions and Ongoing Engagement

Based on feedback received during and after the NSSR and NCTTC meetings, we will revise and finalize the stakeholder engagement plan. This task will ensure stakeholder input is continuously integrated into technical tasks, particularly the use case development and micrositing analysis in Task 3. By providing a transparent, accessible engagement structure from the outset, we aim to build regional trust and ownership over the siting recommendations that result from this work.

Task 3: Analysis

This task represents the analytical core of the project. It is structured around three sequential phases:

- (1) defining use cases and estimating station sizing needs;
- (2) identifying the number and general location of stations; and,
- (3) conducting a parcel-level micro siting analysis.

Each phase draws on a blend of stakeholder engagement, modeling, and spatial analysis, with regular coordination touchpoints to ensure alignment with HCAOG and regional priorities.

3.1 Use Case Definition and Station Sizing

Our team brings a wealth of experience in big data analytics for transportation planning. For this project, we will leverage Replica—a high-resolution, behaviorally accurate mobility dataset—to analyze travel activity across the North State region. This will allow us to characterize vehicle miles traveled (VMT), routing patterns, and operational intensity for both freight and transit sectors.

- For **freight vehicles**, we will use Replica to estimate daily and annual VMT, identify primary corridors, and quantify the density and directionality of freight flows. These insights will be supplemented by direct engagement with freight operators to validate the findings and assess near-term hydrogen adoption rates.
- For **transit operators**, our team—supported by Optibus—will identify existing and proposed routes, fleet characteristics, VMT, and scheduling patterns to determine hydrogen demand profiles and vehicle fueling windows.
- Using this operational data, our team will develop a refueling station sizing model that incorporates vehicle class, fueling time, expected dwell time at stations, and station throughput needs.

This analysis will result in detailed assumptions for station sizing. A decision point is built into this phase to ensure HCAOG is satisfied with stakeholder input and the assumptions used in the sizing methodology before moving forward.

3.2 Estimating Station Need and Placement

Once use cases and station sizes are established, we will estimate the number of stations required and define their general locations. This work will be guided by:

- Forecasted hydrogen consumption by vehicle type and route
- Operational behavior data from Replica and transit service schedules
- Equity and access goals, ensuring the network provides regional connectivity and includes disadvantaged communities

We will develop a network coverage model to identify priority corridors and node locations, guided by the need to connect the North State region to Sacramento and the Bay Area while supporting local refueling needs. The number and size of stations will be optimized based on modeled demand and use case constraints.

3.3 Micrositing and Site Evaluation

After identifying general locations, we will conduct a parcel-level micrositing analysis to select 2–3 viable candidate sites in each area. This process will be GIS-driven and incorporate a comprehensive set of criteria, including:

- Parcel size and layout to accommodate required station footprint
- Zoning compatibility and permitting feasibility
- Access to highway corridors and safe ingress/egress
- Proximity to grid infrastructure and hydrogen supply potential
- Ownership status and likelihood of acquisition or partnership
- Geologic hazards and environmental constraints
- Location within Federally designated alternative fuel corridors and disadvantaged communities (to enhance funding eligibility)

We will collect and catalog these criteria for each candidate site using a standardized evaluation matrix. Where possible, we will also identify parcel ownership and contact information to support future public-private partnership development.

Optibus Scheduling is an added value option for **Task 3.3 “Conduct micrositing exercise and identify possible specific locations.”** After an initial siting analysis, RMI and Optibus consultants compare impacts of micrositing alternatives on transit service efficiency using Optibus Scheduling. Given the fuel sites, current transit schedules loaded via GTFS data, and expected vehicle specifications, Optibus software will generate operational schedules with indicators of service efficiency, e.g. revenue hours and miles, deadhead hours and miles, and vehicles to operate. The results and benefits of this analysis would include:

- Allowing transit agency stakeholders to move further ahead in planning their hydrogen fleet, infrastructure, and service
- Developing greater buy in from transit agency stakeholders
- Ensuring maximum benefits for transit service and riders, since better optimized infrastructure and fewer deadhead hours means more revenue/service hours



Schedule with Operational KPIs

We recognize that developing a robust siting analysis for hydrogen fueling infrastructure in the North State region presents several technical and logistical challenges. These include limited availability of consistent data across a large rural geography, different planning capacities across jurisdictions, and the need to align multiple use cases—particularly freight and transit—within a single cohesive station network. Additionally, future hydrogen demand is inherently uncertain, making it essential to balance rigor with flexibility in the analytical approach.

Our team is equipped to meet these challenges through a combination of strong data capabilities, stakeholder-grounded analysis, and project discipline. We have deep experience conducting infrastructure siting studies using big data methodologies and have successfully navigated the challenges of lower resolution data availability in rural geographies in other project work. We supplement these insights with targeted outreach to stakeholders to ground-truth assumptions about vehicle volumes, operating patterns, and hydrogen adoption potential.

To deliver on time and meet HCAOG’s expectations, we apply disciplined project management practices. We will hold monthly coordination meetings with HCAOG staff to track milestones and flag decision points early. All workstreams will be tracked using internal project management tools, and we will maintain a structured log of stakeholder feedback and its disposition within the analysis. Our workflows are designed to be adaptive, allowing us to adjust to stakeholder needs or data limitations without compromising deliverable quality or timelines.

Finally, we ensure product quality through internal peer review, structured QA/QC protocols, and by aligning our deliverables with HCAOG’s formatting, accessibility, and communication standards. We prioritize clarity, traceability of assumptions, and transparency in modeling—ensuring that HCAOG, its partners, and the public can confidently rely on the findings to support future planning and investment.

Task 4: Draft and Final Technical Memorandum

We will synthesize analytical findings into a technical memorandum that is both accessible and technically rigorous. The memo will detail the methodology used, maps of potential site locations, and a recommended roadmap for phased station deployment. Key actions include:

- Prepare an administrative draft for review by HCAOG and Caltrans staff
- Revise based on feedback and present the draft technical memorandum to the North State Super Region
- Deliver a final, visually engaging and ADA-compliant technical memorandum

The report will be structured for multiple audiences—policy, technical, and public sector—so that it can support further funding applications, capital planning, and stakeholder mobilization. The project team will continue having regular check ins with HCOAG staff through each phase of report drafting. There will be an opportunity for staff to review each round of edits on the report to minimize the risk of unexpected rounds of revision.

Task 5: Regional Presentations

Following the publication of the Final Technical Memorandum, we will deliver a series of presentations to regional partners, transit and freight operators, Tribal transportation groups, and others. We will tailor each presentation to the audience, emphasizing relevance to their operations and opportunities for future collaboration. The objective of these presentations will be to highlight the key findings in the analysis and encourage further action towards hydrogen infrastructure development. Key actions include:

- Conduct virtual and in-person briefings, including at the Far North Transit Symposium
- Provide presentation materials that can be reused or adapted by local agencies
- Create a high-level fact sheet suitable for outreach to funders and policymakers

Summary

Our approach is designed to be collaborative, iterative, and rooted in both data and stakeholder buy-in. By integrating local insights with technical modeling, and by building on previous hydrogen infrastructure efforts, this project will provide a clear, credible pathway to deploying hydrogen fuel stations across the North State region. The final outputs will empower stakeholders to act and invest with confidence, accelerating the equitable transition to zero-emission transportation.

Work Plan & Schedule

The spreadsheet below captures our projected project schedule. We assume a June 2025 start, given the adjusted staff award recommendation date of May 15th, 2025. The project schedule includes approximate hours for specific tasks in the “LOE” column. The full spreadsheet schedule is attached to this application as well for easier review.

Key
Major Task
Subtask
Work item
Deliverable (SOW)
Decision point

Task	Description	Staff	LOE	Jun-25	Jul-25
1 Kickoff, Coordination					
1.1 Project Kick off meeting					
	Organize kickoff meeting	Nick	8		
	Produce meeting notes w/ action items, detailed project timelines and budget	Nick	4		
1.2 Project Coordination - recurring meetings throughout project w/ HCAOG staff to track progress, discuss decision points, keep on budget and schedule		Nick			
	Produce meeting notices, agendas and meeting minutes for project management meetings	Nick	42		
2 Stakeholder engagement					
2.1 Stakeholder engagement plan		Nick/Mia			
	Identify stakeholder organizations w/ contact info	Nick/Mia	8		
	Develop methods and frequency of contact	Nick/Mia	8		
	Establish process for responding to feedback	Nick/Mia	8		
	Generate list of information needed from stakeholders to complete analysis	Nick, Kirill, Kate, Optibus	16		
	Draft stakeholder engagement plan	Nick/Mia	16		
2.2 Regional Project Kick-off					
	Develop facilitation and presentation plans for meetings	Nick/Mia	60		
	Facilitate North State Super Region meeting	Nick/Mia	12		
	Facilitate North Coast Tribal Transportation Commission meeting	Nick/Mia	12		
	Document stakeholder outreach, slides for kick off at NSSR and NCTTC meetings, slides and/or notes from updates provided to	Nick/Mia	4		
2.3 Post-regional Project Kick-off Revisions					
	Revise stakeholder engagement plan w/ feedback	Nick/Mia	10		
	Final stakeholder engagement plan document	Nick/Mia	4		

Task	Description	Staff	LOE	Jun-25	Jul-25	Aug-25	Sep-25			
3 Analysis										
	Coordinate and host monthly status update meeting w/ HCAOG	Nick/Mia/Kirill								
	Request information from stakeholders	Nick/Mia	8							
	Establish geographic bounds of study areas - land area, routes of interest, etc	Kiril/Optibus	4							
	Decision Point: Sufficient stakeholder input									
3.1 Determine the use case and the expected station size										
	Freight - utilize Replica to establish VMT, number and driving pattern of vehicles in study area	Kirill	24							
	Transit - Optibus team establish routes, VMT, number of vehicles, schedules for buses	Optibus	16							
	Freight & Transit - Use stakeholder information, industry interviews to determine hydrogen adoption rates	Kiril/Optibus	80							
	Station sizing - CAI/CFT coordinate to establish vehicle characteristics, likely H2 station characteristics, including refueling times	Kiril/Kate	20							
3.2 Determine number and placing of stations										
	Use station size and fuel consumption needs to determine needed number of stations	Kiril/Kate	8							
	Identify general station locations using operating behavior data for freight and transit vehicles		12							
3.3 Conduct micro siting exercise and identify possible specific locations										
	Collect parcel sizing, zoning, ownership, geologic hazards, and other criteria for site selection	Kiril/Optibus	24							
	Establish 2-3 sites per general location	Kiril/Optibus	60							
	Decision Point: HCAOG satisfied w/ analysis outputs									
Task	Description	Staff	LOE	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25
4 Draft and Final Technical Memorandum										
4.1 Administrative Draft of the Technical Memorandum										
	Write first draft of technical memorandum - methodology, maps, implementation recs, fact sheet, appendix on stakeholder engagement	Nick/Kirill	90							
4.2 Draft Technical Memorandum										
	Receive comments from HCAOG and Caltrans and edit draft	Nick/Kirill	40							
	Present Draft Technical Memorandum to the NSSR for comments	Nick/Kirill	12							
	Deliver summary presentation to North State Super Region	Nick	8							
4.3 Final Technical Memorandum										
	Include NSSR comments and publish Final Technical Memorandum	Nick/Kirill	24							
	Decision Point: No further edits on technical memorandum									
Task	Description	Staff	LOE	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26
5 Regional Presentations										
	Conduct up to 6 virtual presentations of findings	Nick/Mia	20							
	Provide up to 2 virtual presentation to freight industry groups	Nick/Mia	16							
	Present in-person at Far North Transit Symposium in June/July	Nick/Mia	16							
	Deliver meetings agendas, presentation materials for all events	Nick/Mia	16							

Cost Proposal

RMI estimates \$221,542 to advance the proposed project scope. This cost includes all hours of work, budgeted travel for three trips by one staff member for three in-person events in the Humboldt County area, and in-house design costs for the technical memorandum. An estimated breakdown of cost by task is as follows:

Task	Cost
1. Project Kickoff	\$14,017
2. Stakeholder Engagement	\$38,510
3. Analysis	\$95,000
4. Draft and Final Technical Memorandum	\$56,702
5. Regional Presentations	\$17,314

Total	\$221,542
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The hourly costs of personnel are as laid out in the table below. RMI's fiscal year ends June 30, 2025 at which point our hourly rates will shift for the new fiscal year. This shift has been accounted for in our project budget. This table includes personnel not discussed in Key Personnel who will be supporting the project but not engaged in any of the items described in the Approach. Supporting activities include tasks like editorial and design review on deliverables and invoicing and administrative processing.

Personnel	FY2025 Hourly Rate	FY2026 Hourly Rate
Managing Director, RMI (Leia Guccione)	\$551	\$579
Principal, RMI (Lynn Daniels, Patrick Malloy)	\$327	\$343
Manager, RMI (Mia Reback, Amelia Tenne)	\$225	\$236
Program Operations Manager, RMI (Ian Peters)	\$191	\$201
Senior Associate, RMI (Nick Pesta, Kirill Tchernyshyov, Nocona Sanders, Kate Hickey)	\$176	\$185
Optibus		\$125

Direct cost items that are factored into the budget:

Item	Description	Cost
Optibus Costs	Optibus team time and transit software for work in Task 3: Analysis	\$30,000
Travel Cost	Total travel for project. Assumes 3 trips in person meeting. Each trip is assumed to be 1 trip of 2 nights by 1 person. Costs per unit are broken out below.	\$3,453
<i>Travel -> Flight</i>	Based on current flights booked with advanced notice to Eureka from RMI office locations	\$350

<i>Travel -> Hotel</i>	GSA Lodging for Humboldt, average of Summer and Winter rates, one night	\$148.50
<i>Travel -> Meals</i>	GSA Meals and Incidentals per diem reimbursement rate	\$68
<i>Travel -> Ground Transportation</i>	For taxi or car rental, per day	\$100

Required Attachments

The resume for key project personnel have been submitted as separate files alongside this document.

Thank you

To avoid catastrophic climate change, we need big ideas - we also need bold partners who support our mission. We appreciate the opportunity to work with you to decarbonize transportation in the North State region of California.

Kate Hickey

Experience

Rocky Mountain Institute

01/09/2024 – Present

Senior Associate, Hydrogen and Industrial Decarbonization

- Analytical research on hydrogen trade, policy, industry, and the economy, focusing on its impact on decarbonization for the hardest to abate sectors including steel, fertilizer, aviation, shipping, and heavy duty trucking.
- Generating insight reports and presentations including policy recommendations, strategies for convening stakeholders, market overviews, and technical analyses.
- Developing qualitative frameworks and cost models to understand the impact of public funds and economic trends on hydrogen derived commodities and their prices in international markets.

HTEC Hydrogen Technology and Energy Corporation, Vancouver, BC

04/16/2022 – 12/15/2023

Clean Fuels Analyst

450 – 2920 Virtual Way, Vancouver, BC, V5M 0C4

- Project development activities for two hydrogen liquefaction projects in North America including project financial modeling, grant applications and project reports, feasibility studies, and stakeholder engagement.
- Program management for a group of projects including hydrogen production, refueling stations, and transportation solutions in the Pacific Northwest.
- Lead small project teams in technoeconomic model development for new projects, emissions reporting and auditing, and hydrogen powered port equipment design.
- Managed hydrogen offtake and supply, building relationships and contracts with strategic partners and customers.

Zen and the art of Clean Energy Solutions, Vancouver, BC

05/01/2021 – 04/16/2022

Junior Engineering Associate

178 E 32nd Ave, Vancouver, BC V5V 3M1 (permanently closed due to acquisition by HTEC)

- Technoeconomic analysis for early stage small to large hydrogen production facilities and transportation projects for clients.
- Presentations and reports prepared for clients in Canada and the U.S summarizing technical analysis, project recommendations, and market overviews.
- Managed projects and supported clients in preparing applications for grant funding.

UBC BioProducts Institute, Vancouver, BC

10/01/2020-03/31/2021

Technical Business Analyst

5000-2332 Main Mall, Vancouver, BC, V6T 1A4

- Completed a market study and report for the BC Pulp and Paper Bio-Alliance: a group of over 10 industry, research and government partners.
- Co-authored a journal article on the environmental, social and economic challenges and opportunities of disposable wet wipes. *DOI: 10.15376/biores.18.1.Hadley*
- Supported grant writing team by providing technical and non-technical inputs to funding applications.
- Generated metrics and research impact statistics for over 70 researchers connected with the institute.

Sustainable Queen's, Kingston, ON

05/14/2018-04/26/2019

Sustainability Office Intern

99 University Ave., Kingston, ON K7L 3N6

- Planned and managed Sustainability Week, growing it to consist of over 20 events hosted in collaboration with over 30 campus and community partners.

- Performed a feasibility study on converting the campus gas heating system to a more efficient hot water system.
- Gathered data on all greenhouse gas emissions on campus and summarized findings in a report.
- Created engaging content for and managed communication platforms which target thousands of students, faculty and staff, as well as community members.

Hatch Ltd., Mississauga, ON

05/01/2017 – 08/25/2017

Engineering Summer Student, Industrial Clean Technology

2800 Speakman Dr, Mississauga, ON L5K 2R7

- Member of process engineering team, contributing to technical drawings, technical and design reports, and project equipment lists.
- Worked with MicroStation software, PowerPoint presentations, Excel data analysis, MineVent simulation software and presented results to team and at client meetings.

Teck Resources Ltd., Trail, BC

05/04/2016 – 08/26/2016

Plant Operator at Oxide Plant

1000 25 Aldridge Ave, Trail, BC V1R 4L8

- Responsible for Oxide residue process including managing system software, taking process samples, adjusting process accordingly, and reacting quickly and appropriately to upsets in the process.
- Trained as Forklift and Bobcat skid steer operator, lifted and moved large pieces of equipment and process material.

Education

Queen's University, Kingston, ON

09/01/2015 – 04/30/2019

Bachelor of Applied Science, Major in Engineering Physics – Mechanical Option, High Honours

99 University Ave., Kingston, ON K7L 3N6

- Relevant Coursework: Wind Energy, Sustainable Product Design, Global Food Security, Technical Entrepreneurship, Thermal Systems Design
- Thesis: Developed a building energy audit tool to help establish business cases for green energy projects for the Sustainability Office
- Group tutor at Four Directions Indigenous Centre
- Mentor at WISE (Women in Science and Engineering)
- Co-Chair of Hockey Helps the Homeless – Queen's raising over \$75,000 for the Kingston Youth Shelter

Professional Certifications/Training

- Thinking on your feet – Communicating in a Dynamic Environment, UBC Sauder School of Business, 2024
- Financial Statements Analysis, UBC Sauder School of Business, 2023
- Indigenous Intelligence Training, Indigenous Canada Solutions, 2023
- 4 Seasons of Reconciliation, First Nation University of Canada, 2022
- Business Analysis Fundamentals, UBC Sauder School of Business, 2022

LYNN JOSEPH DANIELS

Denver, CO 80216

• (267) 275-7321 •

lynn.j.daniels@gmail.com

EXPERIENCE

ROCKY MOUNTAIN INSTITUTE, Boulder, CO

Technical Product Director, August 2024 - present

Manager, June 2017 – July 2024

Senior Associate, June 2014 – May 2017

- Lead team of data scientists on the Carbon-Free Transportation team developing and implementing public data products including dashboards and web-based tools
- Lead and manage two multi-year U.S. DOE-funded projects analyzing vehicle telematics data to estimate electric truck charging demand and develop regional roadmaps
- Lead and manage multiple projects with major U.S. utilities, including developing a transportation electrification strategy with Seattle City Light and trucking corridor charging analyses with National Grid
- Led comprehensive interviews with fleet owner/operators and utilities to understand barriers and opportunities to fleet electrification; wrote and published report, *Steep Climb Ahead*
- Led collaboration with WattTime, wrote and published report, *More EVs, Fewer Emissions*, to understand opportunity for charging EVs based on marginal emissions rates
- Led multiple projects with private sector clients to develop go-to-market and investment strategies, in particular for managed charging and fleet consulting
- Led canvas of state transportation electrification policies for Oregon DOT's transportation electrification needs assessment and statewide EV roadmap
- Led development of and hosted multiple stakeholder workshops including an industry-wide convening to understand the pathway to rapidly scaling vehicle electrification
- Lead and provide oversight for all internal efforts for data sharing, development of internal models and tools, and use of common data sources and assumptions

ADVANCED MANUFACTURING OFFICE, U.S. Department of Energy, Washington DC

AAAS Science & Technology Policy Fellow, September 2011 – May 2014

- Led DOE contribution to \$26 million interagency Advanced Manufacturing Jobs & Innovation Accelerator Challenge, coordinating five Federal agencies (NIST, EDA, DOL, SBA, DOE)
- Led development of STEM education and workforce development initiatives including Advanced Manufacturing Fellowships and Manufacturing MBA program

EDUCATION

Ph.D., Physics, UNIVERSITY OF PENNSYLVANIA, Philadelphia, PA, 2010, 3.94/4.0 GPA

B.S., Physics, CARNEGIE MELLON UNIVERSITY, Pittsburgh, PA, 2004

PUBLICATIONS

Lynn Daniels, Dave Mullaney, Emily Porter. ACT Now: How the Advanced Clean Trucks Rule Will Impact the Electric Grid and Fleets, RMI, 2024, <https://rmi.org/insight/how-the-advanced-clean-trucks-rule-will-impact-the-electric-grid-and-fleets/>

Lynn Daniels, Britta Gross, Christy Lewis, and Laurie Stone, More EVs, Fewer Emissions: How to Maximize Emissions Reductions by Smart Charging Electric Vehicles, RMI, 2022, <http://www.rmi.org/insight/more-evs-fewer-emissions>.

Lynn Daniels and Chris Nelder, Steep Climb Ahead, RMI, 2021. <https://rmi.org/steep-climb-ahead>.

Lynn Daniels and Brendan O'Donnell, Seattle City Light: Transportation Electrification Strategy, RMI 2019, <https://rmi.org/insight/seattle-city-light>

Lynn Daniels and EJ Klock-McCook, "If We Cherry-Pick Data, Rely on Discredited Projections, and Ignore CO₂...EVs are Bad!", RMI, 2018. <https://rmi.org/if-we-cherry-pick-data-rely-on-discredited-projections-and-ignore-co2-evs-are-bad/>

Andy Keeton, Allison Crow, Lynn Daniels, Tim Karfs, and David Levy, Mapping Incentives to Change: How Commutifi's Commuter Score Can Influence Sustainable Commuting. RMI, 2018. www.info.rmi.org/mobility_commuter_score

L.J. Daniels, T.K. Haxton, N. Xu, et al. Temperature-Pressure Scaling for Air-Fluidized Grains near Jamming. *Phys. Rev. Lett.*, 108, 138001 (2012).

L.J. Daniels and G.J. Epstein. "Department of Homeland Security". *AAAS Report XXXVI: Research & Development FY 2012*. AAAS Board of Directors. Washington, DC. Pp. 111-118. (2011)

L. J. Daniels, Y. Park, T. C. Lubensky, and D. J. Durian. Dynamics of gas-fluidized granular rods. *Phys. Rev. E* 79, 041301 (2009)



Patrick Molloy, BA, MEcon.Sc, MA

EXPERIENCE OVERVIEW

Patrick Molloy is a Principal with Rocky Mountain Institute's Climate Aligned Industries program. Patrick leads RMI's Ammonia, Fertilizer, and Industrial Infrastructure initiative, with particular focus on ammonia markets and hydrogen infrastructure, as part of this he leads critical research around the value proposition of ammonia as an alternative fuel or feedstock and focuses heavily on the potential challenges and opportunities emerging in the development of next generation infrastructure. Patrick has previously led work across the industrial value chain, looking at topics such as renewable energy system integration into mining operations, and looked at applied policy implications for technology implementation as part of the Breakthrough Technology group at RMI.

Prior to joining RMI in 2015, Patrick worked extensively in the policy & advisory space, providing economic and financial policy advice and supporting organizations navigate administrative processes to bring policy forward with legislators.

SELECTED PROJECT EXPERIENCE

Patrick is one of the premier experts on hydrogen markets and emerging applications. He leads strategic research and is frequently invited to speak at industry events and conferences and contributes publicly on key decisions and announcements in the global market.

Patrick leads work on hydrogen infrastructure development, in the form of the North American Hydrogen Backbone, as well as workstreams across the ammonia value chain. In this role he has supported private companies looking to understand the potential opportunities for engagement and understanding the critical structural barriers. He has also supported Hydrogen Hub applications looking at the role and potential for salt cavern storage resources in providing system resiliency. He has also led work focused on fuel system infrastructure needs with a particular focus on hydrogen fuel cell vehicles. Patrick previously led work as part of RMI's mining team focused on mine site remediation and new use.

RELEVANT EMPLOYMENT HISTORY

RMI, Principal, AFII, 2024-Present
RMI, Manager, 2022 - 2024
RMI Sr. Associate, 2017 - 2022
RMI Associate, 2017-2019
RMI Financial Analyst, 2016-2017
Oireachtas Eireann, Chief of Staff, 2012 – 2014
Ipsos MRBI, Consultant, 2011-2012

Years of Experience

Professional start date: 2011

RMI start date: 2016

Accomplishments

Help develop Poseidon Principles for shipping finance portfolio alignment with International Maritime Organization decarbonization targets

Provided primary analysis for hydrogen applications across a number of heavy industrial sectors

Led team developing analysis in support of DOE FOA for Hydrogen Hubs and in examining the project level implications of 45V tax credit approaches.

Developed, with partners, the North American Hydrogen Backbone concept, engaging infrastructure stakeholders across North America

Education & Training

BA Politics and History 2008

MEcon.Sc Economic & Public Affairs 2009

MA International Economics: focus on Infrastructure Finance 2016

Selected Publications

[An Urgency for Connective Hydrogen Infrastructure](#): The criticality of pipelines and storage to scaling North American clean hydrogen markets

[Fueling the Transition](#): Hydrogen Cost and Industry Demand Potential

Nicholas Pesta

San Francisco, CA / (908) 698-2683 / npesta@rmi.org

EDUCATION

University of California, Berkeley, Berkeley, CA

Master of Public Policy/ Master of Science in Civil Engineering, May 2020

Coursework: Principles of Data Science, Climate Change Economics, Tech. for Sustainable Societies, Policy Analysis

University of Pennsylvania, Philadelphia, PA

Bachelor of Science in Engineering May 2014, summa cum laude

Major: Mechanical Engineering and Applied Mechanics, Minor: International Relations

Honors: Tau Beta Pi Honor Society

PROFESSIONAL EXPERIENCE

RMI, *Senior Associate (2022-present), Associate (2021-2022)*

February 2021 - Present

- Project manager for 3 year effort to develop GridUp, a modeling tool that produces high resolution EV load forecasts for the entire US
- Managing a team that is forecasting the grid infrastructure impacts of freight trucking electrification in the San Francisco Bay Area.
- Contributed analysis, research and recommendations in transportation electrification strategies for the state of Washington and the nation of Tuvalu.
- Developed initial modeling framework for RMI's green fertilizer working team, which sought to understand the economic benefits of developing ammonia-based fertilizer from green hydrogen
- Co-authored *Realizing the Green Jobs Promise*, a thought leadership piece capturing the broad economic opportunities created by the energy transition and describing the strategies available to communities in order to take best advantage of those opportunities.
- Consulted with several Fortune 500 clients on how to interpret and incorporate decarbonization scenarios in to their strategic planning and goal setting.

Catalyst Off-Grid Advisors, *Lead Analyst*

January 2020 – February 2021

- Led team developing the [Access Insights Platform](#), a tool presenting data and analysis from disparate sources to allow for streamlined decision making for electrification and investment in solar projects in several African nations.
- Manage a team of undergraduate data students in the assessment and replication of data science tools for use in the off-grid energy sector for the customer.
- Developed key performance indicator (KPI) dashboard to track metrics and provide analytical insight to off-grid solar distributors to help secure additional funding.

CleanPowerSF, *Energy Policy Analyst Intern*

June 2019 – August 2019

A department of the City and County of San Francisco that performs power procurement for a majority of City residents.

- Supported CleanPowerSF in the drafting of their Integrated Resource Plan, a plan that forecasts how the department plans to procure power and ensure reliability for the City of San Francisco over the next 10 years.
- Utilized utility forecasting models to develop clean energy incentive programs.
- Analyzed potential local clean energy projects and wrote a memo stating the CCA's opinion on local small wind energy projects.
- Performed an analysis of the programs that are offered to City residents to see if there were any opportunities to promote more renewable, efficient or affordable power consumption practices.

UC Berkeley Division of Data Science, *Graduate Student Researcher*

January 2019 – December 2019

- Created a strategic plan to form a data science collaborative that will enable academics on campus to partner with governments and private companies to implement data science techniques in social impact projects.
- Organized and supported undergraduate student teams for the Discovery Program, an initiative to provide students with the opportunity to work on data science research projects and learn customer best practices.
- Lead data management and visualization efforts to track program performance and create a more streamlined student performance forecasting system.

Sierra Club Beyond Coal Campaign, *Graduate Policy Analyst (team of 8)*

January 2019 - May 2019

- Performed a retrospective analysis on the economic, political and financial mechanisms that have resulted in the shutdown of municipal utility owned coal fired power plants.
- Created a list of recommended policy and advocacy strategies which support scenarios of accelerated coal plant retirement.

Berkeley Innovative Solutions, Consultant (team of 5)

September 2018- December 2018

- Developed policy recommendations for a client in the offshore wind industry on how to focus their advocacy efforts to improve the competitiveness of offshore wind projects in California.
- Analyzed California's regulatory framework for public and investor-owned utilities to identify opportunities for off-shore wind projects to succeed.

Advanced Solar Products, Flemington, NJ, Energy Engineer

January 2017-July 2018

A full service distributed energy engineering services company that has also been a leading voice in advocating for renewable energy policies at the state level in New Jersey

- Assisted the president of the company on special projects, including conducting research on renewable energy technology and energy efficiency methods and creating cost estimation tools to drive further business development.
- Performed an energy data quantitative analysis on demand in the state of New Jersey to inform advocacy position on new solar incentive policy.
- Project managed a five-member project team working on a portfolio project that will put 17 MWs on 88 sites for the City of New York

TECHNICAL SKILLS

High level of expertise in Microsoft Office, R, Python, and Visual Basic for Applications (VBA)

Proficient with STATA, GIS, MATLAB, Tableau, and Javascript.

Energy industry-focused expert with hands-on experience developing and deploying innovative sustainability concepts and best practices using relevant metrics in compliance with energy/transportation regulations and leading change within dynamic organizations.

QUALIFICATIONS SUMMARY

Energy Efficiency & Renewables

- Energy-efficient electronic materials
- Renewables public policy

Quantitative Analysis

- Computational physics
- Energy metrics

Technology

- Intermediate coding fluency in Python; basic familiarity with C++
- Proficient in agent-based modeling and high-performance, parallel-core computing

Leadership & Presentation Skills

- Committee organizer and adviser
- Publication in peer-reviewed journals

EDUCATION

PhD, Materials Science & Engineering

University of Michigan
Ann Arbor, Michigan, May 2021

BS, Physics

BS, Applied Mathematics

Minor in Spanish

Missouri University of Science and Technology
Rolla, Missouri, 2016

GRANTS

Union of Concerned Scientists:

Science for Public Good Grant, 2019

Science Debate:

Science Advocacy Grant, 2019

University of Michigan Library:

Community Engagement Mini-Grant, 2019

Ford School of Public Policy:

Project Grant, 2019

LANGUAGES

Spanish, Intermediate

EXPERIENCE HIGHLIGHTS

RMI

Mar 2023 – Current

Senior Associate, Carbon-Free Transportation

Uses a variety of analytical methods to support electric vehicle adoption efforts. Organizes stakeholder engagements to discuss ideas and proposals surrounding electric vehicle adoption. Builds total cost of ownership models to assess the economic feasibility of sustainability strategies.

Gladstein, Neandross & Associates

May 2021 – Feb 2023

Senior Technical Associate

Analyzed emissions and energy impacts from several fuels and fuel pathways; such as renewable gaseous and liquid fuels, traditional petroleum-derived fuels, and electricity. Developed infrastructure recommendations to support electric vehicle deployment. Organized meetings with clients to share key ideas through precise communication.

- Evaluated policies/regulations and advocate specific policy positions as well as communicate implications to clients
- Managed total cost of ownership and return-on-investment metrics by creating economic models for transportation technology deployments

University of Michigan, Ann Arbor

2016 – May 2021

PhD Candidate, Materials Science & Engineering

Obtained doctorate with a concentration in renewable energy and energy analysis, and a Graduate Certificate in Science, Technology, and Public Policy. Have developed exceptional knowledge and experience in process improvement, setting and achieving goals, project management, team leadership, internal and external influences on energy policy, and guiding and collaborating with public, legal, regulatory, civic, business and legislative groups and policymakers.

- Concentrated doctoral studies on energy-efficient LED materials and materials for high-power electronics
- Developed case study on how state regulators, legal elements, public, tax codes and infrastructure investments impact adoption of sustainable energy policies, practices and construction in Iowa
- Worked with an industry partner to characterize a candidate material for high performance p-type thin film transistors
- Identified candidate materials for next-generation energy-efficient power electronics
- Wrote 2 articles and co-authored 6 for peer-reviewed physics journals
- Spoke at five American Physical Society and Materials Research Society conferences.

**Engaging Scientists in Policy & Advocacy
Consensus Conference Lead**

2018 – 2019

Organized 2019 Washtenaw County (Mich.) Consensus Conference on Water Security, led team in analysis of related technical and state social issues, coordinated discussions among lawmakers, civic and business leaders and the team's subject matter experts, and followed up with state lawmakers to suggest policies to protect waterways and municipal infrastructures.

- Secured \$6,000 in grants to fund event.

**Missouri University of Science and Technology, Rolla
BS Candidate, Physics; BS Candidate, Applied Mathematics**

2012 – 2016

Graduated Summa Cum Laude with two bachelor's degrees and a minor in Spanish.

- Used methods of computational physics to research the electronic properties of amorphous transparent conducting oxides
- Co-managed a synthetic biology design team in engineering *E. coli* to combat white nose syndrome in bats.

COMMITTEES

**Research Policies Committee, University of Michigan Faculty Senate
Graduate Student Representative**

2018 – 2020

Represented graduate student interests on policy and procedures related to University research activities

- Negotiated a change to College of Engineering intellectual property policy to protect master's degree students' proprietary research and development

**Rackham Student Government, University of Michigan
Representative – Budgetary, Legislative Affairs Committees**

2018 – 2019

Advised administration on issues and solutions to meet graduate student needs.

- Led a policy memo working group on state funding for graduate education and devised a state tax incentive plan to promote post-graduation student retention; presented both to lawmakers

**Ann Arbor City Council Student Advisory Committee
Representative for University of Michigan graduate students**

2018

Advocate for graduate students in city-related issues.

- Co-leader of a team collaborating with city council to identify student-trafficked areas with low street light visibility

RECOGNITION

- Featured in Gramlich Showcase of Outstanding Student Work, Ford School, University of Michigan, 2020
- Invited Panelist, Day on the Hill Science Advocacy Workshop, 2019
- Rackham Merit Fellowship, 2016
- Blue Key Spirit of Change Volunteerism Scholarship, 2015
- Eagle Scout, 2012

Mia Reback

(310) 717-7966

6404 ½ Orange St, Los Angeles, CA 90048

mreback@rmi.org

EDUCATION

Yale University, School of the Environment

New Haven, CT

Master of Environmental Management, 2021

- **Focus:** Climate Change Science and Solutions, Energy and the Environment
- **Relevant Coursework:** Climate Change Mitigation in Urban Areas, Deep Decarbonization by Sub-National Actors, Urbanization-Global Change-and-Sustainability, Energy Systems Analysis, Renewable Energy Project Finance, Energy Economics and Policy Analysis, Environmental Data Visualization, Decarbonization Pathways to Limit Climate Change
- **Teaching Fellow:** Climate Change Policy and Perspectives, **Faculty:** Daniel C. Esty, Fall 2020
- **Conference organizer:** Oceans and Climate Conference 2020, panel chair Marine Plastics & Petrochemicals
- **Leadership:** Climate Change Student Interest Group, Co-leader)

Reed College

Portland, OR

Bachelor of Arts, *Environmental Studies - Economics*, 2014

- **Thesis:** Distributional Effects of an Oregon Carbon Tax (**Advisor:** Dr. Noelwah Netusil)
- **Honors and Awards:** Mellon Environmental Studies Summer Experience Fellowship, Precourt Institute Student Fellow Behavior Energy and Climate Change Conference 2013, Commendation of Academic Excellence

RELEVANT EXPERIENCE

Rocky Mountain Institute (RMI)

Remote

Manager, Climate Aligned Industries

January 2023 - present

- Led development of a ‘clean industrial hub’ in California. Worked with project developers, policy makers, financial institutions, and community-based organizations to advance industrial decarbonization projects in California. Led team of RMI staff to lead workshops and provide technical assistance to project developers working on zero-emissions drayage trucking at the Port of Los Angeles, industrial electrification, green hydrogen, and sustainable aviation fuel.
<https://hubs.rmi.org>

Senior Associate, Urban Transformation

August 2021 – present

- Led a 10-month cohort for seven cities in Texas developing community resilience hubs. Led project management and supported three Associates. Developed presentation materials and coordinated with guest speakers to successfully deliver monthly workshops. Led 1-1 meetings with participating cities and oversaw development of a site selection tool and solar + storage RFP template.
- Led report writing for “Growing to Its Potential: the Value of Urban Nature for Communities, Investors, and the Climate.” Led the economic analysis of the global costs and benefits of urban nature from 2023-2050, including supporting one Associate to contribute. Supported graphics creation, development of promotion materials, and presentations for the RMI Program Forum, RMI IIF Committee, and COP 27.
- Coordinated RMI’s work for the American Cities Climate Challenge with San Antonio, Atlanta, and Charlotte including team meetings, City of Charlotte zero carbon energy gap analysis, and presentation to Aggregation Cohort on legal and accounting risks of aggregated power purchase agreements.
- Wrote a comment letter submitted by 106 members of America’s All In to support of the FHWA GHG reporting rule.
- Wrote blogs on aggregated power purchase agreements, insights for cities in the IPCC report, and urban nature.

Independent Contractor

August 2020 – June 2021

- Developed presentation materials and assisted with giving six monthly workshops for local governments on aggregated power purchase agreements. Facilitated breakout discussions for government officials with the Center Region Council of Governments, Pennsylvania on a joint solar procurement.
- Research and writing for an urban cooling handbook for local governments to address the urban heat island. Assisted with research on building form and passive cooling and writing on community centric initiatives and facilitative strategies.
- Developed presentation materials and co-facilitated a 4-hour workshop on aggregated power purchase agreements for businesses in Cincinnati, Ohio.

Intern, City Renewables Accelerator

May 2020 – August 2020

- Developed guidance for local governments to participate in buyer-led aggregation, a new strategy for procuring renewable energy to achieve municipal energy goals.

- Wrote Local Government Load Aggregation Procurement Guide, Virtual Power Purchase Agreement Legal Memo, Aggregation Accounting Guide, and other materials to support cities, counties, and regional governments.
- Engaged with local governments interested in aggregation.

Yale School of the Environment

New Haven, CT

IPCC Research Associate

August 2021 – June 2022

- Research Associate to Dr. Karen Seto working on the Intergovernmental Panel on Climate Change, AR6 Working Group III, Chapter 8: Urban Systems and Other Settlements.
- Contributing Author section 8.3.4.1 Urban land expansion and GHG emissions
https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter_08.pdf
- Support for final report compilation, referencing, and adherence to IPCC guidelines.

IPCC Research Assistant

October 2019 – August 2021

- Research Assistant to Dr. Karen Seto working on the Intergovernmental Panel on Climate Change, AR6 Working Group III, Chapter 8: Urban Systems and Other Settlements.
- Co-managed the chapter reference database of over 2,000 publications used as reference material for the report.
- Conducted data analysis to support the chapter authors. Collected data from peer reviewed publications and grey literature and compiled and managed data sets in R to support research and figure development for the chapter. Projects included (1) compared city level estimates of greenhouse gas emissions in 300+ cities represented in three data sources; (2) created an R script to reverse geocode city name from latitude and longitude; (3) added Köppen-Geiger climate zone data to a data set of 13,000 cities to enable analysis of emissions patterns by climate; and (4) used R to downscale global estimates of future urban land expansion to IPCC region from six peer reviewed studies and created a new data set of the results.
- Developed synthesis figures in R for the chapter including estimates of future urban land expansion and figures showing range in emissions estimates for cities.
- Assisted with report compilation and adherence to IPCC guidelines, including ensuring correct referencing and formatting.

Yale Program on Climate Change Communication (YPCCC)

New Haven, CT

Social Media Manager

August 2020 – June 2021

- Managed the student social media team of 6 producers and ensure daily posts on the YPCCC Facebook and Twitter accounts.
- Trained social media producers in science communication, non-partisan communication, and graphic design.
- Led bi-monthly social media team meetings on Zoom.

Deputy Social Media Manager

September 2019 – July 2020

- Co-ran the student social media team of 7 producers for YPCCC.
- Edited graphics in Canva for daily posts on [Facebook](#) and [Twitter](#).

Sustainable Energy and Economy Network (SEEN)

Portland, OR

Lobbyist, Multnomah County and City of Portland

February – July 2019

- Worked with government officials and non-profit organizations to support a “Fossil Fuel Risk Bond” program for fuel terminals at the Portland Critical Energy Infrastructure Hub.
- Successfully lobbied to allocate \$50,000 in initial funding to conduct a “Fossil Fuel Risk Assessment” to evaluate the externalized costs associated with local fossil fuel infrastructure and climate change adaptation.
- Led a coalition of 16 non-profit organizations to campaign against tar sands by rail at the Zenith Energy Oil Terminal.

350PDX

Portland, OR

Lead Organizer

August 2016 – April 2018

Campaign and Development Coordinator

June 2015 – August 2016

- Led campaigns and programs, including (1) City of Portland [Resolution 37168](#) to oppose to new fossil fuel infrastructure (2015); (2) City of Portland [Ordinance 188142](#) to change the zoning code to restrict bulk fossil fuel terminals (2016); (3) No Oregon Gas Plants coalition that stopped a proposal to build 2 new fracked gas power plants in Oregon (2017); and (4) Multnomah County & City of Portland [Resolution 37289](#) for 100% Renewable Energy (2017).
- Coordinated development, grants, and individual donors. Grew budget from \$10k in 2015 to \$250k in 2018.
- Managed 6 summer interns, 2 fellows, and 1 junior staff. Helped grow organization from staff of 1 to staff of 6.
- Planned over 50 events and actions, including three major mobilizations with 1,000+ people attending.

- Facilitated weekly meetings and represented organization in coalitions and stakeholder advisory meetings.
- Managed communications and outreach: website, email blasts, social media, and press. Grew email list from 1,000 to 8,000.
- Supported 200 volunteers working in 15 volunteer teams including State Legislation, Fossil Fuel Divestment, Renewable Energy, Fossil Fuel Resistance, and Development.

City of Portland Bureau of Planning and Sustainability

Portland, OR

Community Service Aide II – Portland and Multnomah County 2015 Climate Action Plan

December 2014 – March 2015

- Analyzed Portland and Multnomah County carbon emissions from transportation, residential, commercial, industrial, and solid waste for 1970 to 2013 with ICLEI Clearpath for the 2015 Portland and Multnomah County Climate Action Plan.

Community Service Aide II – Sustainability at Work

June 2014 – June 2015

- Provided assistance and sustainability recommendations to local businesses as part of the City of Portland Bureau of Planning and Sustainability's Sustainability at Work program.
- Wrote "How to Buy Green" Resource Guide for businesses featuring tips based on life cycle environmental impact and case studies of local sustainable businesses: <https://www.portlandoregon.gov/sustainabilityatwork/62710>.
- Managed social media and website for Sustainability at Work program.
- Wrote for program blog: <https://www.portlandoregon.gov/sustainabilityatwork/62148?archive=2014>
<https://www.portlandoregon.gov/sustainabilityatwork/62148?archive=2015>.

ADVISORY COMMITTEES

- Carbon Dioxide Standard Rulemaking Advisory Committee, Oregon Department of Energy (2018)
- 100% Renewable Energy Stakeholder Group, Pathways to 100%, Multnomah County (2017 – 2018)
- Portland Mayor Wheeler Environmental Transition Team, Climate and Energy Subgroup (2016 – 2017)
- Fossil Fuel Export Policy Advisory Group, City of Portland Bureau of Planning and Sustainability (2015)

SKILLS

- Project management, stakeholder engagement, facilitation, and negotiation.
- Greenhouse gas accounting: municipal/local government, company/entity level, ICLEI Clearpath.
- Microsoft Excel, Word, Power Point, Outlook; Adobe Photoshop and Illustrator, Canva; Wordpress; Zoom, Teams; R.
- Communications: report writing, blog writing, media relations, interviews, public speaking, and social media.

PUBLICATIONS

- Blog: The Case for Placing Drayage Truck Chargers Away from Ports. March 28, 2024. By Nocona Sanders, Ari Kahn, Julia Thayne, Emily Porter, and **Mia Reback**.
- Report: Growing to Its Potential: The Value of Urban Nature for Communities, Investors, and the Climate. November 14, 2022. By Julia Meisel, **Mia Reback**, Michael Donatti, Zach Clayton, Emma Loewen, Lindsay Rasmussen, Jacob Korn, Rushad Nanavatty <https://rmi.org/insight/growing-to-its-potential/>
- Blog: Blueprints for a Green City: Integrating urban nature into cities reduces emissions, saves money, and promotes equity. November 14, 2022. By Zach Clayton, **Mia Reback**, Julia Meisel, Shelby Kuenzli <https://rmi.org/blueprints-for-a-green-city/>
- Blog: Weathering Climate Disasters with Resilience Hubs. October 26, 2022. By Bryn Grunwald, **Mia Reback**, Ryan Warsing <https://rmi.org/weathering-climate-disasters-with-resilience-hubs/>
- Blog: Four Lessons for Cities in the Latest IPCC Report. April 6, 2022. By **Mia Reback**. <https://rmi.org/four-lessons-for-cities-in-the-latest-ipcc-report/>
- Report: Contributing Author to the Intergovernmental Panel on Climate Change Working Group III, Chapter 8 Urban Systems and Other Settlements section 8.3.4.1 Urban land expansion and GHG emissions https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter_08.pdf
- Report: Beating the Heat: A Sustainable Cooling Handbook for Cities. November 3, 2021. By Iain Campbell, Sneha Sachar, Julia Meisel, Rushad Nanavatty, Radhika Lalit, **Mia Reback**. <https://rmi.org/insight/sustainable-urban-cooling-handbook/>
- Insight Brief: Procuring Large-Scale Renewables through Aggregation: A Guide for Local Governments. August 17, 2021. By **Mia Reback**, Alisa Petersen, Stephen Abbott, Yuning Liu <https://rmi.org/insight/procuring-large-scale-renewables-through-aggregation/>
- Blog: Banding Together: How Aggregation Helps Cities Buy Renewables at Scale. August 17, 2021. By Yuning Liu, **Mia Reback** <https://rmi.org/banding-together-how-aggregation-helps-cities-buy-renewables-at-scale/>

Kirill Tchernyshyov

Las Vegas, NV
(725) 724-1571
kirill.tchernyshyov@rmi.org

EXPERIENCE

Senior Data Scientist

Rocky Mountain Institute

March 2024-Present

- Rebuilding **Python** package **GridUp** for projecting block group-level power consumption by electric vehicle charging across the entire United States, resulting in a 100x speed-up.
- Co-developing **JavaScript** front-end and back-end and **PostgreSQL** database to display US-wide electric vehicle charging projections (gridup.rmi.org).
- Leading adoption of good software development practices on the Carbon Free Transportation Data Team.

Data Science Postdoctoral Fellow

University of Washington, Seattle WA

August 2019-March 2024

- Built open source **Python** packages **veeper** and **jax-voigt** for the analysis of astronomical data
- Supervised six undergraduate students in collaboratively writing a pipeline to produce a catalog of galaxy properties (github.com/smbet/werk-squad-tools)
- Presented astronomical research and consulted on non-astronomical researchers' machine learning problems at the interdisciplinary eScience Institute

Data Volunteer

UNITE HERE, NV

Fall 2022

- Cut and assigned turf for the largest ballot curing operation in Nevada
- Used **pandas** and fuzzy text matching to compare state voting and ballot curing lists with internal data products
- Visualized voter turnout patterns using **geopandas** and **QGIS**

EDUCATION

PhD, Physics & Astronomy

Johns Hopkins University, Baltimore MD

September 2012–August 2019

- Contributed to **BEAST**, a **Python** package for estimating properties of stars from large (of order 100 million rows) photometric catalogs and wrote **amlc**, a tool for robustly estimating uncertainties in analyses of spectra.
- Invented **machine learning tools** for measuring gas velocities as a function of 3D position to produce the first maps of gas flows in the Milky Way. These maps provide insight about how the Milky Way's spiral arms formed.

SKILLS

- Python for statistics and ML (cvxpy, jax, numpyro, scikit-learn), data visualization (matplotlib, seaborn, plotly), workflows (Apache Airflow, Snakemake)
- Data ingestion and transformation (dlt, dbt), database and data warehouse operation (PostgreSQL, DuckDB, BigQuery)
- Geospatial analysis and mapping (Mapbox GL js, geopandas, QGIS)
- Collaborative code development with git (as maintainer and as contributor)

OPEN SOURCE PACKAGES

- amlc (github.com/ktchnr/amlc): Python package for handling multiplicative nuisance parameters; designed and written by me
- BEAST (github.com/BEAST-fitting/beast): Python package for estimating stellar properties from up to 100 million row datasets; contributed core code
- jax-voigt (github.com/ktchnr/jax-voigt): Python package re-implementing the Faddeeva function in order to enable analysis gas absorption with jax-ecosystem optimization and inference packages; designed and written by me
- veeper (github.com/ktchnr/veeper): Python package for absorption line fitting; inherited codebase from group, supervised undergraduate in making core routines more modular, replaced slow finite difference Jacobians used in optimization with fast analytic expressions, in charge of general bug fixes

SELECTED PAPERS

- Tchernyshyov et al. (2023), *The CGM² Survey: Quenching and the Transformation of the Circumgalactic Medium*, in the *Astrophysical Journal*. Assimilated datasets from different sources to resolve a long-standing divide in theoretical models of how galaxies transform over time.
- Wilde, Tchernyshyov, et al. (2023), *CGM² + CASBaH: The Mass Dependence of H I Ly α -Galaxy Clustering and the Extent of the CGM*, in the *Astrophysical Journal*. An analysis of how gas is distributed around 7000 galaxies, led by a graduate student whose PhD thesis I co-advised. I advised the lead author on how to design and write the analysis code.
- Tchernyshyov & Peek (2018), *Kinetic Tomography. I. A Method for Mapping the Milky Way's Interstellar Medium in Four Dimensions*, in the *Astronomical Journal*. Presents a new data analysis technique and applies it to make the first map of gas flows in the Milky Way as a function of 3D position.

HAMIDREZA ZORAGHEIN

hrz1365@gmail.com [◇ linkedin](#) [◇ Website](#) [◇ +1\(720\) 878-2151](#)

Data Scientist

With 10+ years of hands-on experience, I have excelled in developing data-intensive solutions that harness structured and unstructured data, employing advanced computational analytics. My expertise spans machine and deep learning, predictive modeling, data mining, quantitative analysis, and statistical modeling, all seamlessly applied to big data and scenario-based applications. My comprehensive knowledge extends to database systems, cloud computing, data visualization tools, and proficient scripting in Python and R. I'm adept at leading every facet of a project, from systematic data collection to analysis and deployment, as well as pattern recognition and dissemination of results. My collaborative skills thrive in cross-functional and multi-disciplinary environments, and I'm an avid learner in the ever-changing field of data science.

AREAS OF EXPERTISE

Predictive Modeling, Machine Learning (Supervised and Unsupervised), Deep Learning, Feature Engineering, Data Wrangling, Data Visualization, Quantitative Modeling, Statistical Analysis, Structured and Unstructured Databases, GIS, Remote Sensing, Anomaly Detection, Optimization

SKILLS

Programming Languages:	Python (PySpark, SciPy, Pandas, Numpy, Rasterio, Fiona, Arcpy), R (Tidyverse, Data.table, Parallel, Terra, rjags, sf, Raster), SQL
Machine/Deep Learning Libs:	Keras, Tensorflow, PyTorch, Scikit-learn, NLTK, XGBoost, Statsmodels
Machine Learning Concepts:	Time-Series, RNNs, CNNs, LSTM, Naive Bayes, Decision Trees, SVM, Regression, K-means Clustering, DBSCAN, Gradient Boosting
Cloud Technologies:	Microsoft Azure, Google Cloud, Google Earth Engine
Data Visualization:	Tableau, Shiny, Matplotlib, Plotly, ggplot, Seaborn
Professional Software:	VS Code, RStudio, Git/GitHub, PostgreSQL, MS Office, ArcGIS, QGIS
Soft Skills:	Project Management, Teamwork, Critical Thinking, Problem-solving, Communication, Adaptability

EXPERIENCE

Senior Data Scientist Jan 2024 - Present
Rocky Mountain Institute *Boulder, CO (remote)*

- Northeast Freight Corridors Charging Plan (NFCCP) Project.
 - Leveraged telematics data to develop predictive models forecasting power load demands at 139 highway plazas in 9 Northeastern states, supporting strategic infrastructure planning for truck electrification. (Python, R, and predictive modeling).
 - Created load forecasts for battery-electric and hydrogen fuel cell powertrains to enhance understanding of system load profiles and demand patterns. (Python, R, and predictive modeling).
 - Assessed seasonal effects on power load demands to inform forecasting and infrastructure planning.

Associate Oct 2019 - Jan 2024
Population Council *New York, NY (remote)*

- Led the launch of the [Community Demographic Model](#), an interactive data hub hosting a wide array (15+) of data products and visualizations of socioeconomic mega trends (matplotlib, shiny, ggplot).
- Co-led the collaborative project of utilizing AI for generating weekly forecasts of COVID-19 incidence rates at U.S. county level over different forecast horizons. Built an end-to-end machine learning workflow (data collection, feature engineering, model optimization and validation) using XGBoost and LSTM. Our model continuously ranked among the **top 5 accurate** models among all models submitted to the [US COVID19 Forecast Hub](#), being **50** cases per county more accurate than the COVIDhub-ensemble (scikit-learn, XGBoost, tensorflow).

- Led the geospatial assessment of India's subnational vulnerability to climate hazards by standardizing/combining a diverse range of big structured (650K+ tabular census records) and unstructured (high-resolution remote sensing imagery) datasets (R: sf, ggplot, raster, Python: Arcpy).

Research Scientist

Sept 2018 - Oct 2019

Frederick S. Pardee Center for International Futures

Denver, CO

- Developed a predictive model to project 10+ demographic characteristics (population size, gender, age structure, migration, etc) of U.S. states over 2010-2100 using R (tidyverse, data.table).
- Developed a scalable and parallel geospatial model to generate U.S. state-level projections of the spatial distribution of population (Max: 1.7M+ points in Alaska) using Python (numpy, scipy, fiona, rasterio, multiprocessing).

Postdoctoral Fellow

Aug 2017 - Aug 2018

National Center for Atmospheric Research

Boulder, CO

- Developed a pattern recognition pipeline to predict subnational urbanization levels for the U.S., China, and India using R (tidyverse, devtools).
- Created interactive visualization dashboards for NCAR's demographic models using R's shiny.

Graduate Research Intern

Aug 2015 - Aug 2017

National Center for Atmospheric Research

Boulder, CO

- Developed a data analytical approach to predict different aspects of household configuration (size, residency, education level) for 9 world regions using R (tidyverse).
- Transferred NCAR's demographic models to R scripts to improve scalability and ease of access.

EDUCATION

Ph.D. in Geography - Geographic Information Science, University of Colorado Boulder 2013 - 2017

Master of Geographic Information Systems, K.N. Toosi University of Technology Iran 2008 - 2011

Bachelor of Civil Engineering (Surveying), K.N. Toosi University of Technology Iran 2004 - 2008

PROJECTS

NYC Town and Gown, Climate Vulnerability, Impacts, and Adaptation Analysis. Develop a predictive model to generate high-resolution projections of NYC population by age and race using python (rasterio, fiona, shapely, multiprocessing) and R (tidyverse, sf, terra, data.table).

A global projection of population by degree of urbanization. Develop a big-data predictive model that uses spatial feature engineering and Deep Learning (LSTM, tensorflow) on time-series of unstructured remote sensing products to generate high-resolution global projections of population and built-up land.

PROFESSIONAL CERTIFICATES

- Deep Learning Specialization (DeepLearning.AI)
- TensorFlow Developer (DeepLearning.AI)
- TensorFlow: Advanced Techniques (DeepLearning.AI)
 - Custom Models, Layers, and Loss Functions with TensorFlow
 - Custom and Distributed Training with TensorFlow
- Bayesian Statistics Specialization (1, 2) (University of California Santa Cruz)
 - Bayesian Statistics: From Concept to Data Analysis
 - Bayesian Statistics: Techniques and Models

SUBCONSULTANT LIST – RFP EXHIBIT C

The proposal shall include a complete list of all proposed subconsultants. All subconsultants listed must be provided a meaningful element of work within the defined scope of work. Changes to this Subconsultant List will not be allowed without prior written approval from RTPA.

Proposed Subconsultants

Subconsultant Firm Name and Address	Scope of Work	Dollar Amount of Work
Name Optibus Address 310 Southwest 4th Ave. Board of Trade	Subcontractor will contribute to Task 3: Analysis as described in main proposal submission	\$ 30,000
Name Building, Suite 1100 Address Portland, OR 97204		\$
Name Address		\$
Name Address		\$
Name Address		\$
Name Address		\$

RMI

Name of Lead Firm

Leia Guccione, Managing Director

Printed Name and Title of Signatory

Leia Guccione

Leia Guccione (Apr 11, 2025 08:37 MDT)

Signature

Apr 11, 2025

Date