Western Riverside Council of Governments
Technical Advisory Committee

AGENDA

Thursday, January 16, 2025
9:30 AM

Western Riverside Council of Governments
3390 University Avenue, Suite 200
Riverside, CA 92501

<u>Remote Meeting Locations</u>:

City of Beaumont
Beaumont Civic Center
550 East 6th Street, Map Room
Beaumont, CA 92223

City of Calimesa
Senior Center Map Room
908 Park Avenue
Calimesa, CA 92230

City of Lake Elsinore
City Hall, City Manager's Office
130 S. Main Street
Lake Elsinore, CA 92530

City of Murrieta
1 Town Square, Conference Room 2C
Murrieta, CA 92562

City of Temecula
City Hall, City Manager's Office
41000 Main Street
Temecula, CA 92590

City of Wildomar
City Hall
23873 Clinton Keith Road, Suite 201

Wildomar, CA 92595

March Air Reserve Base
14205 Meridian Parkway, Ste. 140
Meridian Conference Room
Riverside, CA 92518

3593 Eastfield Court
Carmel, CA 93923

Committee members are asked to attend this meeting in person unless remote accommodations have previously been requested and noted on the agenda. The below Zoom link is provided for the convenience of members of the public, presenters, and support staff.

Public Zoom Link
Meeting ID: 845 3727 4013
Passcode: 478832
Dial in: 669 444 9171 U.S.

In compliance with the Americans with Disabilities Act and Government Code Section 54954.2, if special assistance is needed to participate in the Technical Advisory Committee meeting, please contact WRCOG at (951) 405-6706. Notification of at least 48 hours prior to meeting time will assist staff in assuring that reasonable arrangements can be made to provide accessibility at the meeting. In compliance with Government Code Section 54957.5, agenda materials distributed within 72 hours prior to the meeting which are public records relating to an open session agenda item will be available for inspection by members of the public prior to the meeting at 3390 University Avenue, Suite 200, Riverside, CA, 92501.

In addition to commenting at the Committee meeting, members of the public may also submit written comments before or during the meeting, prior to the close of public comment to lfelix@wrcog.us.

Any member of the public requiring a reasonable accommodation to participate in this meeting in light of this announcement shall contact Lucy Felix at least 72 hours prior to the meeting at (951) 405-6706 or lfelix@wrcog.us. Later requests will be accommodated to the extent feasible.

The Committee may take any action on any item listed on the agenda, regardless of the Requested Action.

1. **CALL TO ORDER (Clara Miramontes, Chair)**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **PUBLIC COMMENTS**
   At this time members of the public can address the Committee regarding any items within the subject matter jurisdiction

of the Committee that are not separately listed on this agenda. Members of the public will have an opportunity to speak on agendized items at the time the item is called for discussion. No action may be taken on items not listed on the agenda unless authorized by law. Whenever possible, lengthy testimony should be presented to the Committee in writing and only pertinent points presented orally.

5. CONSENT CALENDAR

All items listed under the Consent Calendar are considered to be routine and may be enacted by one motion. Prior to the motion to consider any action by the Committee, any public comments on any of the Consent Items will be heard. There will be no separate action unless members of the Committee request specific items be removed from the Consent Calendar.

A. Action Minutes from the November 21, 2024, Technical Advisory Committee Meeting

Requested Action(s):

1. Approve the Action Minutes from the November 21, 2024, Technical Advisory Committee meeting.

6. REPORTS / DISCUSSION

A. Professional Services Agreement with AECOM Technical Services, Inc.

Requested Action(s):

1. Recommend that the Executive Committee approve the Professional Services Agreement with AECOM Technical Services, Inc., for microgrid and community resilience center feasibility studies in an amount not to exceed $175,000.

B. VMT Mitigation Program Activities Update

Requested Action(s):

1. Receive and file.

7. REPORT FROM THE EXECUTIVE DIRECTOR

Dr. Kurt WIlson

8. ITEMS FOR FUTURE AGENDAS

Members are invited to suggest additional items to be brought forward for discussion at future Committee meetings.

9. GENERAL ANNOUNCEMENTS

Members are invited to announce items / activities which may be of general interest to the Committee.

10. NEXT MEETING

The next Technical Advisory Committee meeting is scheduled for Thursday, February 20, 2025, at 9:30 a.m., in WRCOG's office at 3390 University Avenue, Suite 200, Riverside.

11. ADJOURNMENT

Technical Advisory Committee

Action Minutes

1. CALL TO ORDER

The meeting of the Technical Advisory Committee was called to order by Chair Clara Miramontes at 9:30 a.m. on November 21, 2024, in WRCOG's office.

2. PLEDGE OF ALLEGIANCE

Chair Miramontes led the Committee members and guests in the Pledge of Allegiance.

3. ROLL CALL

- City of Banning - Doug Schulz
- City of Beaumont - Elizabeth Gibbs
- City of Calimesa - Will Kolbow
- City of Canyon Lake - Mike Borja
- City of Eastvale - Mark Orme
- City of Hemet - Mark Prestwich
- City of Jurupa Valley -
- City of Lake Elsinore - Jason Simpson
- City of Moreno Valley - Sean Kelleher
- City of Murrieta - Justin Clifton
- City of Norco - Lisette Free*
- City of Perris - Clara Miramontes
- City of San Jacinto - Travis Randel
- City of Temecula - Betsy Lowrey
- Eastern Municipal Water District (EMWD) - Jolene Walsh

* Arrived after Roll Call

Absent:

- City of Menifee
- City of Riverside
- City of Wildomar
- County of Riverside
- Riverside County Office of Education
- Western Water
- March JPA

4. PUBLIC COMMENTS

There were no public comments.

5. CONSENT CALENDAR

ACTION:	**APPROVED AS RECOMMENDED**
MOVER:	Moreno Valley
SECONDER:	Eastvale
AYES:	Banning, Beaumont, Calimesa, Canyon Lake, Eastvale, Hemet, Jurupa Valley, Lake Elsinore, Moreno Valley, Murrieta, Perris, San Jacinto, Temecula, EMWD

A. Action Minutes from the September 19, 2024, Technical Advisory Committee Meeting

Action:

1. Approved the Action Minutes from the September 19, 2024, Technical Advisory Committee meeting.

6. REPORTS / DISCUSSION

A. Energy Resilience Plan 2.0 Activities Update

Action:

1. Received and filed.

B. Emerging Mobility Innovations

Action:

1. Received and filed.

C. The Use of Artificial Intelligence in Local Government: City of Corona Case Study

Action:

1. Received and filed.

D. Update on Climate Action Plan for Transportation Infrastructure (CAPTI)

Action:

1. Received and filed.

7. REPORT FROM THE EXECUTIVE DIRECTOR

Executive Director Dr. Kurt Wilson reported that the Fellowship Program is underway. The Commercial PACE Program is in the process of adjusting the maximum bond capacity, and will now consider that process on an annual basis. Staff will propose to include the TAC and Finance Directors Committee into the budget conversation in the spring of 2025. If there are any issues of regional interest that are affecting agencies, Committee members are encouraged to reach out to Bonnie Woodrome, who is working on the Advocacy Platform. If any member agencies can offer career coaching for staff, WRCOG would like to partner. Staff will be attending different trainings and WRCOG often has a few extra seats to those trainings; interested member agencies are welcome to send their staff to fill those spots. The

annual WRCOG Open House will be held on December 11, 2024, from 11:30 a.m. to 1:30 p.m. Lastly, there will be a Regional Energy and Climate Hub event on December 5, 2024, at Morongo.

8. ITEMS FOR FUTURE AGENDAS

Committee member Lisette Free inquired about insurance increases. Deputy Executive Director stated the BIA has contacted him about the issue, and can put Committee members in touch with them for more information.

9. GENERAL ANNOUNCEMENTS

Committee member Sean Kelleher invited the Committee to the annual Snow Day in the City of Moreno Valley on December 7, 2024, at 10:00 a.m., and a holiday tree lighting in the evening, along with a celebration of Moreno Valley's 40th anniversary.

10. NEXT MEETING

The next Technical Advisory Committee meeting is scheduled for Thursday, January 16, 2025, at 9:30 a.m., in WRCOG's office at 3390 University Avenue, Suite 200, Riverside.

11. ADJOURNMENT

The meeting was adjourned at 10:42 a.m.

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: **Professional Services Agreement with AECOM Technical Services, Inc.**

Contact: **Daniel Soltero, Program Manager, dsoltero@wrcog.us, (951) 405-6738**

Date: **January 16, 2025**

Recommended Action(s):

1. Recommend that the Executive Committee approve the Professional Services Agreement with AECOM Technical Services, Inc., for microgrid and community resilience center feasibility studies in an amount not to exceed $175,000.

Summary:

WRCOG is developing an Energy Resilience Plan (ERP) 2.0 that will assist member agencies with assessing feasibility of implementing microgrids and resilience centers at key facilities. The ERP 2.0 will be a guidance document that member agencies can use to plan for investments into existing buildings to reduce impacts from power outages and improve community resilience towards climate issues and emergency events.

Purpose / WRCOG 2022-2027 Strategic Plan Goal:

The purpose of this item is to authorize a Professional Services Agreement with AECOM Technical Services in order to prepare the feasibility studies for microgrids and community resilience centers, develop a financing / business plan and implementation plan for feasible projects. This work will be delivered as the Energy Resilience Plan 2.0.

This item aligns with WRCOG's 2022-2027 Strategic Plan Goal #5 (Develop projects and programs that improve infrastructure and sustainable development in our subregion).

Discussion:

Background

In 2023, WRCOG was awarded an Adaptation Planning Grant through the Integrated Climate Adaptation and Resiliency Program administered by the Governor's Office of Land Use and Climate Innovation (formerly Office of Planning and Research). The $471,000 grant is funding the development of the ERP 2.0 which will assist member agencies with improving facilities and community resilience towards emergencies and power outages by providing feasibility studies for microgrids and resilience centers.

In 2024, WRCOG coordinated with member agencies to gather a list of buildings and sites to propose as candidates for a microgrid or community resilience center. Staff analyzed the sites to identify known climate hazards that impact the sites and social vulnerabilities for populations that either surround the site or that are served by the sites. Currently, staff are working on a second round of surveys to help gather remaining information to help finalize the site selection. Given that multiple sites are being proposed from each member agency, a prioritization will take place to help member agencies select one site that will receive a microgrid or resilience center feasibility study. Upon site selection, staff will work with member agencies and the consultant to prepare a feasibility study. Concurrently, staff will work member agencies and its grant partner, Grid Alternatives, to conduct community workshops at sites being proposed for a community resilience center to seek input on programs and services that could be provided from these sites.

Present Situation

On November 8, 2024, WRCOG released a Request for Proposals seeking a consultant to provide feasibility studies for microgrids and community resilience centers at existing buildings owned and operated by member agencies. The proposals were due on December 16, 2024, via WRCOG's procurement platform, PlanetBids. WRCOG notified 228 vendors from various industries including electrical contractors, engineering services, electric power distribution, and technical consulting services. At the closing of the RFP, five proposals in total were submitted by: AECOM Technical Services (AECOM), Alternative Energy Systems Consulting (AESC), EcoMotion, S&C Electric Company, and Thornton Tomasetti.

WRCOG formed a Proposal Review Committee consisting of WRCOG staff and staff from the County of Riverside's Facilities Management division, the City of Menifee, and the City of Norco. The Proposal Review Committee reviewed and scored the proposals based on the criteria outlined in the RFP. Upon completion of the review and scoring of proposals, AECOM emerged as the top proposer and the Proposal Review Committee is recommending awarding a contract to AECOM.

AECOM's proposal meets all requested services outlined in the RFP, which include completing feasibility studies for microgrids and community resilience centers at member agency-owned sites, developing a financing / business plan, and preparing an implementation plan (Attachment 1). The microgrid feasibility studies will include review of energy consumption data, identify size and sources of electric power generation and battery energy storage systems, and evaluate system resilience and integration with current infrastructure. A market and financial assessment will also be completed as part of the microgrid feasibility studies to identify a rough order of magnitude cost estimate for the project and to evaluate potential funding/financing strategies.

The feasibility studies for community resilience centers will take a narrative approach to address various categories including building suitability, operation plans, power and water requirements, communications, and identifying services and programs that can assist residents with improving adaptability and resilience towards climate issues and emergency events. A review of all building and architectural drawings will allow AECOM to assess the building for suitability to serve as a resilience center, and data from the microgrid feasibility studies will allow the team to assess power and water requirements. Throughout the microgrid and community resilience center feasibility studies, member agency engagement will take place to validate the evaluations and fill remaining data gaps. Community engagement completed by WRCOG and Grid Alternatives will help inform the services and programs that can be provided to residents from these sites.

Building off the funding strategies identified in the initial Energy Resilience Plan, AECOM will develop a financing / business plan that outlines funding and financing strategies to specifically support implementation of the microgrids and community resilience centers. The deliverable will identify funding sources and provide a menu of options such as grants, third party financing, utility programs, incentives, and tax credits. AECOM will develop a detailed, actionable Implementation Plan to support WRCOG member agencies in advancing the microgrids and community resilience centers identified in the feasibility studies. This Implementation Plan will serve as a practical roadmap, enabling member agencies to navigate the complex processes required to bring these projects into realization.

The agreement amount shall not exceed $175,000 and will be funded by the Adaptation Planning Grant. The services contracted through this agreement are anticipated to be completed by December 2025. The final Professional Services Agreement will be taken forward to the Executive Committee in February 2025.

Prior Action(s):

None.

Financial Summary:

The budget related to consulting activities in this item for the Energy Resilience Plan (ERP) 2.0 will be amended in the upcoming Fiscal Year 2024/2025 mid-year budget amendment that will be brought forward to the Executive Committee in February 2025.

Attachment(s):

Attachment 1 - AECOM Technical Services Proposal

AECOM

Proposal for

Feasibility Studies for Microgrids and Community Resilience Centers

Submitted to: Western Riverside Council of Governments

Date: December 16, 2024

RFP NUMBER: **No. 24-13**

TITLE OF THE PROJECT: Western Riverside County Energy Resiliency Plan

NAME AND ADDRESS OF PROPOSING FIRM:
AECOM Technical Services, Inc.
999 Town and Country Rd, Orange, CA 92868

PHONE/FAX OF PROPOSER:
Phone: (714) 567-2400
Fax: (714) 567-2594

PRIMARY CONTACT PERSON:
Calum Thompson, PE, CEM, LEED AP, ENV SP
999 Town and Country Rd, Orange, CA 92868
Email: Calum.Thompson@aecom.com
M: (310) 467-7083

AUTHORIZED SIGNATORY:
Garrett Harper | Vice President, Managing Principal
Email: garrett.harper@aecom.com
M: (312) 373-7601

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AECOM
999 Town and Country Rd
Orange, CA 92868

T (714) 567-2400
F (714) 567-2594
www.aecom.com

December 16, 2024

Western Riverside Council of Governments
Attn: Janis Leonard
Administrative Services Manager
3390 University Avenue, Suite 200
Riverside, California 92501
jleonard@wrcog.us

Reference: **WRCOG Feasibility Studies for Microgrids and Community Resilience Centers**
RFP Number 24-13

Dear Janis and members of the selection committee,

Western Riverside Council of Governments (WRCOG) is committed to supporting its member agencies to be better prepared in coming years for climate change impacts including extreme heat, wildfires, and related power outages. This is evidenced by the development of this scope of work which builds upon the framework of the Energy Resilience Plan (ERP) and takes another step towards enhancing community resilience through additional microgrid feasibility studies and an assessment of community resilience center viability. We understand that through this RFP that WRCOG is looking to serve each of its member agencies with the definition of a resilience project and a clear roadmap of the actions required and resources available to successfully implement it.

In working with WRCOG in the development of the Energy Resilience Plan, the AECOM Technical Services, Inc. (AECOM) team has gained an understanding of the diverse stakeholder groups that WRCOG serve, its mission to connect and equitable support its members, and subsequently, the importance of maximize the value of this effort across for the WRCOG members within a limited budget.

In recognition of this, our proposal looks to right-size the effort across all scope elements, ensuring all member agencies are served with at least one microgrid feasibility assessment and that nine community facilities can be assessed as resilience centers. We therefore propose to meet the full goals of the RFP and include all requested facilities. We propose to do this by applying a bespoke assessment and feasibility methodology which relies on our integrated team of CA-based individuals covering the breadth of expertise required and applying it to the right level of detail to inform the next steps for implementation.

The proposed AECOM team has been working together on energy and climate resilience projects in California for over a decade and has a deep understanding of the climate threats and applicable adaptation solutions from current and recent experience working on resilience projects in Southern California including projects for WRCOG, UC Riverside, City of Rialto, LA Metro, LA County, Metrolink and San Diego. We have further strengthened the team that successfully supported WRCOG in the development of the ERP with additional microgrid project development and community asset resilience expertise to better deliver this scope of work. Since the completion of the ERP, our team has conducted feasibility assessments and/or the design of microgrids for Cities of San Jose, Santa Rosa, Santa Clara, and Rialto. We have conducted asset resilience assessments for the County of Santa Clara, assessed over 1,000 CA buildings for ADA compliance, and developed Southern California Association of Governments Regional Resilience Framework.

Alex Mitoma, our proposed project manager based in Orange, CA, has led climate and energy resilience programs over the past two years which included the development of over 20 microgrid projects. Alex recently managed our team's work with UC Riverside and through these engagements worked extensively with our core team. Cal Thompson, our project director, continues his role from the ERP and brings both personal familiarity with WRCOG and this initiative and over a decades' experience in leading energy planning projects across California and the US. Alex and Cal will work together with our core team

comprised of experts in microgrid development, community resilience, and project funding and financing to deliver a high-quality product that serves WRCOG members today and into the future.

We feel we are the best team to continue to support WRCOG's community resilience journey because:

- Our previous experience in developing the ERP provides us a unique knowledge and perspective of the drivers and intent of this effort.
- Our team has the blend of microgrid and asset assessment technical expertise and the experience in developing community resilience and funding plans necessary to successfully deliver this scope of work.
- We have developed an approach to this effort which will allow WRCOG, through this effort, to provide to all of its members with clear steps forward to enhance facility resilience, within the allocated budget.
- Our local management team is passionate about supporting efforts to improve regional community resilience. We are enthusiastic to continue our collaboration with the WRCOG team to make this happen.

We acknowledge Addendum No.1 issued on 2nd of December for this RFP. We have included requested markups to the WRCOG standard Professional Services Agreement for your consideration. These are the same as the ones accepted and agreed upon under our previous Energy Resilience Planning contact.

We confirm that AECOM will be the prime, responsible for all project work and deliverables and that I am the designated individual responsible for all project performance.

We feel strongly that our team's blend of WRCOG experience, project understanding, comprehensive expertise across all scope elements, and commitment to improving our local community, differentiates us as the ideal partner for WRCOG in this effort.

Please let us know if you have any questions, and we look forward to an opportunity to discuss our proposal in more detail.

Sincerely,

Garrett Harper *(Authorized Signatory)*
Vice President, Managing Principal
312-373-7601
garrett.harper@aecom.com

D Firm Capabilities

The proposed AECOM team has over a decade of experience collaborating on energy and climate resilience projects across California. Our deep understanding of climate threats and effective adaptation strategies is rooted in recent and ongoing work on resilience initiatives in Southern California, including projects for WRCOG, UC Riverside, the City of Rialto, LA Metro, LA County, Metrolink, and San Diego. Working with this diverse range of clients has provided our team with an understanding of how to deliver these projects to meet multiple stakeholder needs, and key to this is a commitment to ongoing engagement throughout the project life.

Building on the expertise that successfully supported WRCOG in developing the ERP, we have further enhanced our team with additional expertise in microgrid project development and community asset resilience to better address the scope of work. Since completing the ERP, our team has conducted microgrid feasibility assessments and designs for the cities of San Jose, Santa Rosa, Santa Clara, and Rialto. These studies have been fundamental in development of our process that will deliver WRCOG member agencies actionable feasibility studies for microgrids and CRCs. We have also performed asset resilience assessments for the County of Santa Clara, evaluated several California buildings for ADA compliance, and developed the Southern California Association of Governments' Regional Resilience Framework.

A key aspect in these experiences has been the developing actionable methods to finance and implement projects and our team is well versed in development of strategies to address the concerns of government agencies. For the City of Santa Rose our microgrid study included strategies to finance, along with implementation support. Similarly, our work with the San Diego Airport Authority required support throughout implementation, providing valuable insight into how resiliency projects are delivered within California.

Relevant Experience Matrix

We have chosen a selection of projects to demonstrate how our team's experience meets the criteria set out in the RFP as shown in the below project matrix. Additional project information has been provided for those projects identified with a green star on the proceeding pages.

★ *Project description included*

PROJECT NAME	Similar Governmental Entities	Similar Disciplines and Tasks							
		Microgrid Feasibility Studies			Community Resilience Center Feasibility Studies			Financing Strategies	Implementation Plan
		Feasibility	Concept Design	30%/100% Design	ADA Assessment	Asset Resilience Assessment	Services and Programs		
WRCOG Energy Resilience Plan ★	●	●	●					●	
City of Santa Clara, Renewable Energy Microgrid Feasibility Study and Services ★	●	●	●	●					●
City of Santa Rosa, City-wide Resiliency, Decarbonization and Distributed Energy Resources Study ★	●	●	●			●		●	●
City of Berkeley Energy Assurance Transformation Project (BEAT) ★	●	●	●				●	●	●
GLO - Regional Economic Strategy and Diversification Plan ★	●					●	●		
LACCD Integrated Energy Resource Plans	●	●	●					●	●
City of Rialto, Wastewater Treatment Plant Microgrid - Veolia of North America ★	●	●	●	●					●
San Diego Airport Solar and BESS Support	●	●				●		●	●
City of San Jose, Large Scale Deployment of Distributed Energy Resources and Microgrids on Municipal Facilities ★	●	●	●			●			●
Santa Clara County, Energy Resilience Assessment	●				●	●			
SCAG - Regional Resilience Framework	●					●	●		
US Air Force Intallation Energy Plans (IEPs)		●	●			●	●		●
AVAIO Capital Economic Feasibility Study		●							
Beaumont Unified School District ESPC	●	●							●
Buena Vista Horace Mann K-8 School Modernization Construction Management									●
Commonwealth Edison (ComEd), Microgrid and Smart City Support - Bronzeville		●							
LA County - Deferred Maintenance Program Management	●				●	●			
LA County- General Hospital Move Management Strategy Stud	●				●	●			●
Silicon Valley 2.0						●	●		
Town of Hempstead, Microgrid Feasibility Study	●	●	●					●	●
UC Merced, Energy Master Plan	●	●	●						●

WRCOG Energy Resiliency Plan

RIVERSIDE, CA

CLIENT: WRCOG

PROJECT DATES:
2020 - Ongoing

PROJECT COST: $150,000

RELEVANCE:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Funding and financing strategy development

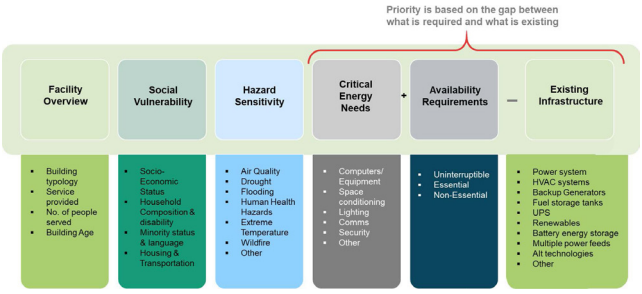
AECOM supported the Western Riverside Council of Governments (WRCOG) with the development of an energy resiliency plan. This Plan was developed by WRCOG's members in response to power interruptions resulting from events such as wildfires, extreme heat, or Public Safety Power Shutoffs (PSPS). WRCOG is a joint powers authority with representatives from eighteen (18) cities in Western Riverside County, the County of Riverside, Morongo Band of Mission Indians and the Eastern and Western Municipal Water Districts and represents a population of over 2,000,000 people.

The WRCOG Energy Resiliency Plan contributes to resilience in the region by developing a blueprint for energy resiliency technologies, projects, and applications for its member jurisdictions. The Plan identifies critical infrastructure and loads in each member jurisdiction and identify projects and strategies to maintain power supply during power interruptions.

The Energy Resiliency Plan is a toolkit for the implementation of energy resiliency technologies, projects, and applications for WRCOG's member jurisdictions. The Plan developed a prioritization methodology for the ranking of facilities requiring intervention and identification of appropriate projects and strategies for these facilities to maintain power supply during power interruptions from environmental events or PSPS. The figure below summarizes the factors considered in the prioritization of facilities for intervention.

The resilience strategies covered in the Plan range from energy conservation and controls upgrades to development of local solar-powered microgrids and energy independent 'islands' across the subregion. The three highest ranked facilities from the prioritization evaluation were selected for further project scoping through concept design. These included a fire station, a water treatment plant, and a community shelter. The AECOM team has developed site-specific concept designs including solar, energy storage and controls upgrades.

A crucial component of the toolkit is the mapping of strategies to appropriate funding mechanisms and technical resources to empower the municipalities to implement identified projects. Stakeholder engagement, not just with WRCOG's member agencies but with stakeholders such as University of California Riverside's (UCR) Center for Environmental Research and Technology (CE-CERT) and local utilities, is a fundamental component of the plan development so it is truly reflective of the challenges and opportunities in the region.



Factors that were weighted and applied to the WRCOG asset list to identify priority facilities for improvements

City of Santa Clara Renewable Energy Microgrid Feasibility Study and Services

SANTA CLARA, CA

CLIENT: City of Santa Clara, CA

PROJECT DATES: 2021 - 2023

PROJECT COST: $154,000

RELEVANT SERVICES:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Action-focused implementation plan and/or guidance

AECOM was awarded the contract to provide a renewable energy microgrid feasibility study and design services for Fire Station #1 and Fire Station #2 in the City of Santa Clara.

The changing energy landscape requires new solutions to address the critical issue of increasing instability of utility power due to aging infrastructure, climate change, and rising cyber-attacks. As part of a plan to address this need for clean, resilient power, The City of Santa Clara awarded AECOM with a contract to provide a renewable energy microgrid feasibility study and design services for two fire stations: Fire Station #1 and #2.

In support of Silicon Valley Power (SVP), the City of Santa Clara is taking steps to develop behind-the-meter renewable microgrids to better serve its customers and community

AECOM's scope of work included, as part of the feasibility study, the identification and economic and technical qualification for two renewable energy microgrids to be located at the City's critical services facilities. This Phase 1 work involved identifying the ideal location, analyzing the most sustainable mix of Distributed Energy Resources (DER) to supply the microgrids and completing a power system study to comply with SVP's interconnection guidelines.

This scope has been completed and AECOM is currently working to complete the 60% design study for these microgrids.

Santa Rosa, City-wide Resiliency, Decarbonization and Distributed Energy Resources Study

SANTA ROSA, CA

CLIENT: City of Santa Rosa, CA

PROJECT DATES: 2023 - 2024

PROJECT COST: $58,000

RELEVANCE:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Facility physical resilience assessments
- Funding and financing strategy development
- Action-focused implementation plan and/or guidance

The project explored the potential for integrating solar photovoltaic (PV) systems into Santa Rosa Water's operations through a detailed feasibility study. It investigated the viability of implementing renewable energy solutions at the Utility Field Office (UFO) and the Laguna Water Treatment Plant (LTP).

The study assessed the energy needs of these facilities, proposing a 330 kW solar PV system for the UFO to fully offset its annual energy consumption and a 9.5 MW floating solar installation at the LTP to address 61% of its energy demand. Advanced tools like Homer Grid, PVsyst, and Helioscope were utilized to analyze system designs, predict energy outputs, and evaluate the technical and financial implications.

By comparing city-owned solar systems and Power Purchase Agreements (PPAs), the project provided a comprehensive analysis of potential cost savings, return on investment, and operational benefits. It also examined regulatory factors like NEM 3.0 and highlighted strategies for reducing greenhouse gas emissions. This feasibility study laid the groundwork for future renewable energy initiatives, offering a roadmap for Santa Rosa Water to enhance sustainability, control energy costs, and improve resilience.

AECOM conducted feasibility studies for two customer sites, analyzing the technical challenges and financial strategies required for deploying two microgrids. These studies outlined the optimal approaches for financing and maximizing the return on investment (ROI) of the systems. The findings were presented to the council representatives, ultimately securing funding for the project.

Berkeley Energy Assurance Transformation (BEAT) Project

BERKELEY, CA

CLIENT: City of Berkeley, CA

PROJECT DATES: 2016 - 2018

PROJECT COST: $400,000

RELEVANCE:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Identification and/or development of community resilience programs
- Funding and financing strategy development
- Action-focused implementation plan and/or guidance

The Berkeley Energy Assurance Transformation (BEAT) project explored how to develop a clean energy microgrid to increase community resilience in a dense urban city center. The BEAT project analyzed the feasibility of designing a Clean EnergyMicrogrid Community (CEMC) that uses solar and energy storage to share power between existing buildings. A microgrid system can better regulateday-to-day energy supply, and in the case of a power outage, can "island" itself from the main utility andprovide clean back-up power for critical buildings.

The BEAT microgrid's primary objective is to utilize solar and battery storage for back-up power at critical facilities and minimize diesel generator use for up to a 7-day outage caused by a major natural disaster.

The BEAT team conducted a series of coordinated regulatory, technical and financial analyses todetermine the feasibility of building a multi-facility CEMC in downtown Berkeley. These analyses informed site feasibility, optimal configurations, operation criteria, financing strategies, and lessons learned. The BEAT project team then developed three shovel-ready prototypes that range in scope, cost, ownership-model, and complexity to help advance the adoption of CEMCs. These scalable prototypes will serve as replicable models for other communities.

Funded by a grant through the California Energy Commission (CEC), this pilot study was intended to uncover roadblocks and opportunities in financing and policy for microgrids with a community benefit, by initiating a feasibility study of a real-world project. The results of this study were shared with the CEC and have informed state-level policy to advance the development of microgrids for community benefit.

Regional Economic Strategy and Diversification Plan

LOWER RIO GRANDE VALLEY, SOUTH TEXAS

CLIENT: Texas General Land Office (GLO)

PROJECT DATES: 2019 - 2021

PROJECT COST: $950,000

RELEVANCE:

- Work with a similar governmental entity
- Facility physical resilience assessments
- Identification and/or development of community resilience programs

AECOM was engaged by the Texas General Land Office (GLO) to complete an Economic Resilience and Diversification Study for the Lower Rio Grande Valley counties of Cameron, Hidalgo, and Willacy. The study emerged from the impacts of 2019 severe storms, COVID-19, Hurricane Hannah in 2020, and winter storms in 2021, along with unique border region economic challenges.

In Phase 1, we identified assets, resources, and deficits in the economy, job market, and consumption of goods and services. We analyzed business climate, target markets, workforce, local government fiscal capacity, housing, transportation infrastructure, and quality of life. In Phase 2, we developed a draft regional economic diversification strategy, and in Phase 3, we formalized an action plan for implementation.

Our work was guided by a multi-pronged stakeholder engagement process, involving the Core Team, County Judges, Lower Rio Grande Valley Development Council (LRGVDC), and the RGV Partnership. These organizations provided stakeholder input and will play key roles in implementing the final strategy.

Our analysis showed the LRGV's rapid growth, with a 3% population CAGR from 1990-2010, presenting infrastructure challenges. While transportation manufacturing struggled in Cameron County, SpaceX-related engineering research grew. We also considered global trends like reshoring and foreign direct investment, reinforcing the LRGV's role as a North American freight gateway. We interviewed port operators and railroads to understand freight issues.

Core strategies focused on:

- Strengthening organizational capacity and regional partnerships for resilience and market access.
- Promoting growth through strategic transportation and infrastructure projects.
- Encouraging housing investment for workforce growth, affordability, and flood risk mitigation.
- Fostering economic inclusion and diversification for stability.
- Improving quality of life through community enhancements and environmental protection.

The Economic Development Strategy & Diversification Study will outline goals, objectives, and strategies for the region, breaking them down into achievable tasks, implementation steps, strategy influencers, and potential funding sources.

City of Rialto Wastewater Treatment Plant Microgrid

RIALTO, CA

CLIENT: Veolia North America

PROJECT DATES: 2021 - Ongoing

PROJECT COST: $530,000

RELEVANCE:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Action-focused implementation plan and/or guidance

The Rialto Wastewater Treatment Plant (RWTP) Microgrid Project, located in Bloomington, California, is a transformative initiative designed to enhance energy efficiency, resilience, and sustainability. Operated by Rialto Water Services (RWS) in partnership with the City of Rialto, the project leverages renewable energy resources to power the plant while reducing its environmental footprint.

The project incorporates a Combined Heat and Power (CHP) unit fueled by biogas—a byproduct of wastewater treatment—to generate electricity and recover heat for digester operations, reducing reliance on natural gas. Solar photovoltaic (PV) arrays will generate additional renewable energy, and a battery energy storage system (BESS) will store excess energy for use during peak demand periods or grid outages. These systems are managed by a microgrid controller that ensures optimal performance and allows the plant to operate independently of the utility grid during outages, enhancing reliability.

The project takes advantage of California's Self-Generation Incentive Program (SGIP) to secure rebates for biogas utilization and energy storage. The initiative reduces energy costs, greenhouse gas emissions, and operational risks while providing a model for sustainable energy integration in municipal wastewater treatment facilities.

AECOM conducted the feasibility study and developed the 30%, 60%, and 90% designs for the microgrid control system, electrical systems, and civil engineering components. These designs encompass power generation technologies, including gas, solar, battery energy storage systems (BESS), and diesel. AECOM also carried out equipment sizing studies, managed procurement processes, and will provide support for the commissioning of the site, ensuring a seamless transition to operational readiness.

Large Scale Deployment of Distributed Energy Resources and Microgrids on Municipal Facilities

SAN JOSE, CA

CLIENT: City of San Jose Public Works

PROJECT DATES: 2023 - Ongoing

PROJECT COST: $240,000

RELEVANCE:

- Work with a similar governmental entity
- Microgrid feasibility of municipal community support facilities
- Microgrid design and procurement
- Facility physical resilience assessments
- Action-focused implementation plan and/or guidance

The San Jose Microgrid Project is a cutting-edge energy initiative focused on enhancing resilience, sustainability, and efficiency for two key municipal sites: Happy Hollow Park & Zoo (HHPZ) and the Rooftop Community Center (RCC). This project combines advanced energy technologies to integrate solar photovoltaic (PV) arrays, battery energy storage systems (BESS), and utility connections, managed by state-of-the-art microgrid controllers (MGCs).

At HHPZ, the microgrid includes a 2100 kWh BESS and a total solar capacity of 525 kWAC, designed to ensure uninterrupted power through seamless transitions between grid-connected and islanded modes. The RCC site complements this with additional solar integration, leveraging existing infrastructure while expanding storage and operational capacity. Both sites utilize the MGCs to optimize energy distribution, prioritize critical loads, and maintain compliance with industry standards such as IEEE 2030.7.

The project emphasizes sustainability by reducing greenhouse gas emissions and improving energy efficiency, while its scalable design ensures adaptability to future energy demands. By integrating real-time analytics and advanced control systems, the microgrids provide a reliable and independent power supply, supporting critical municipal functions. Together, HHPZ and RCC demonstrate San Jose's commitment to innovative, sustainable energy solutions that align with regional climate goals and set a benchmark for urban microgrid projects.

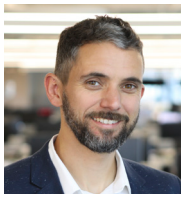
AECOM conducted feasibility studies across multiple customer sites, identifying the two most optimal locations for implementing the microgrid system. Based on the results, AECOM developed the 30%, 60%, and 90% designs for power generation, control systems, and civil engineering components. Additionally, AECOM will help with the procurement of the necessary equipment to support the project's implementation.

Team Structure

AECOM focuses its expertise as needed for projects of all scales, assembling the combination of staff and experience that best suits the project. We blend global knowledge, local experience, technical excellence, innovation, and creativity to offer our clients unparalleled possibilities. We have assembled a best-in-class team and organization to provide the WRCOG with quality professionals and a proven approach to assist with delivering this project. Bios for each key person based on their roles are included as follows. Complete resumes for all team members, highlighting their relevant experience, are provided in Appendix B.

WRCOG KEY STAFF ROLES

ALEX MITOMA, our proposed project manager based in Orange, CA, is a licensed engineer with a background in resilience planning, climate adaptation, and industry energy transitions. Has led a federal climate and energy resilience programs over the past two years which included the development of over 20 microgrid projects. Alex recently managed our team's work with UC Riverside and through these engagements worked extensively with our core team. Alex will be supported by Lilian Nguyen in project coordination, data management, and project delivery.



CAL THOMPSON, our project director, also based in Orange, CA, continues his role from the ERP and brings both personal familiarity with WRCOG and this initiative and over a decades' experience in leading energy planning projects across California and the US. Alex and Cal will work together to direct and support our core team of experts in microgrid development, community resilience, and project funding and financing to deliver a high-quality product that serves WRCOG members today and into the future.

EDGAR ZAVALA is a microgrid solutions architect with 15 years of experience assessing and designing complex power systems projects. Leading the feasibility assessments and subsequent design for microgrids for the cities of Santa Rosa, Santa Clara, San Jose and Rialto. Edgar brings a deep understanding how microgrids can serve and be realized at types of facilities that are the target of this study. Edgar will be leading the microgrid feasibility task. Edgar will be supported by Salim Moslehi in the microgrid modeling, reprising his role from the first Energy Resilience Plan. Abinet Eseye and Chris Houck are specialists in the design and implementation of microgrids and will providing addition technical input in review and implementation strategies.

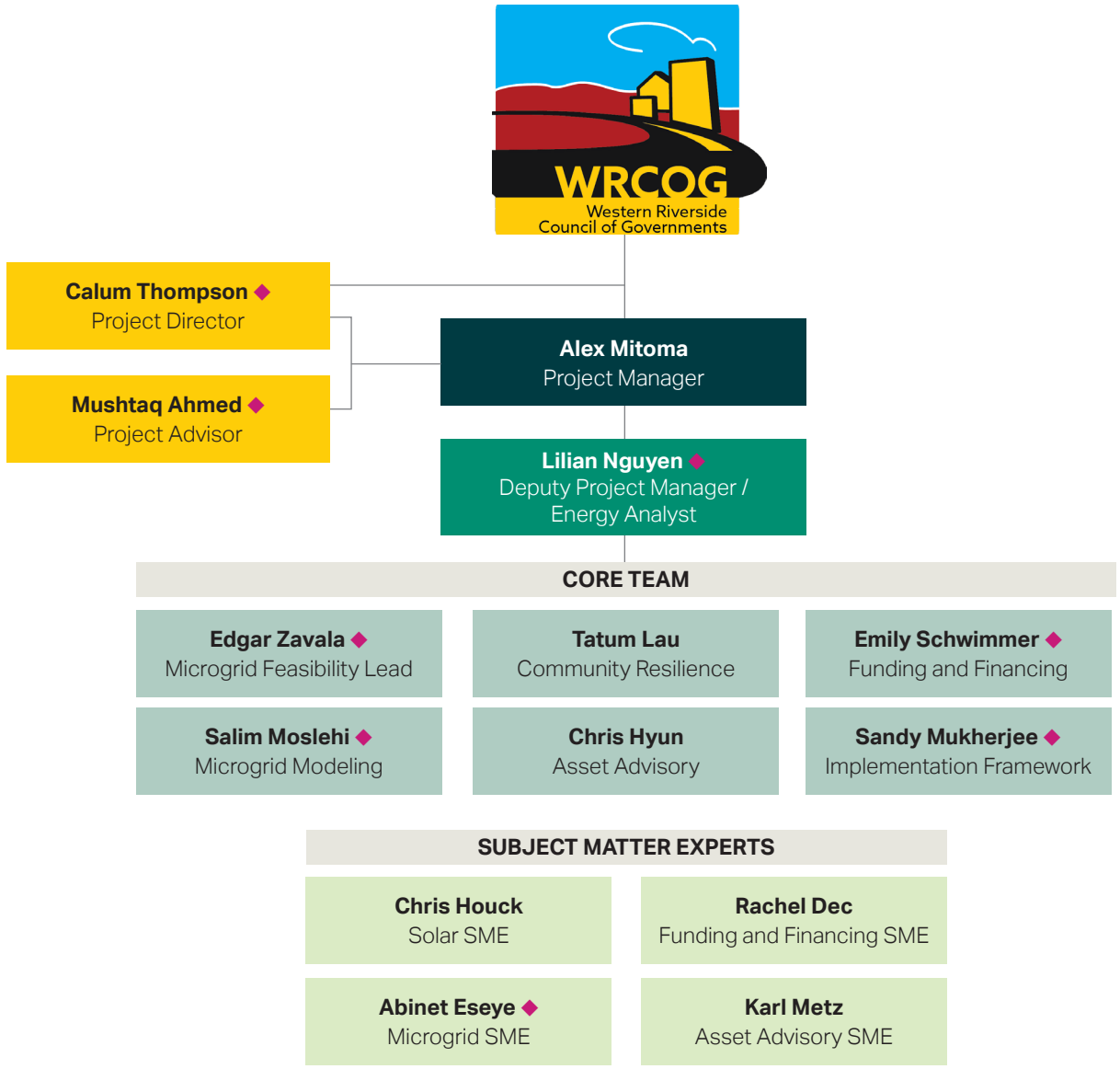
TATUM LAU is AECOM's Social Value and Equity lead for the West. She is an experienced facilitator, bringing diverse interests together to co-create solutions that are ecologically sensitive, encourage economic prosperity and are equitable for communities. She has worked with state, regional, and city governments, as well as non-profits and the development community across climate action, and resilience including developing regional resilience plans and programs for SCAG and for the Texas General Land Office. Tatum will be bringing that knowledge of community resilience planning to WRCOG in leading the Resilience Center Feasibility task supported by Chris Hyun, an architect and asset assessor with experience in ADA assessments.

EMILY SCHWIMMER is an urban planner and economist with over ten years' experience working with public agencies, non-profits, and private sector organizations to fund, finance, and implement programs and capital improvement projects that aim to protect the environment, address socio-economic inequities, and improve the resiliency of communities. As with the development of the WRCOG Energy Resilience Plan, Emily will lead the funding and financing strategies identification. Emily will be supported by Rachel Dec, and economic analyst and researcher with a background in government policy development.

SANANDA MUKHERJEE leads AECOM's sustainability practice and has worked with various municipal, government and state level agencies as well as utility companies to establieh buildings and infrastrucutre sustainability policies and guidance. Similar to the devleopment of the WRCOG Energy Resileince Plan, Sandy will lead the development of the community resilience framework.

Organizational Chart

The following organizational chart i shows our proposed project team structure and identifies our project director, project manager, and all personnel who will be assigned to work on this project. WRCOG is very familiar with most of our core team members as most Worked on the WRCOG ERP. We will not change any key personnel without prior WRCOG approval.



◆ *Worked on the WRCOG ERP*

Company Information

At AECOM, we're delivering a better world.

AECOM is a globally established and recognized sustainability consulting firm. We are one of the industry's leading providers of consulting services related to sustainability, planning, design, construction, and operations of airport, seaport and commercial real estate infrastructure and facilities. We are also one of the world's largest and most comprehensive sustainability implementation firms, supporting our clients with a range of sustainability services including sustainability management plans, stakeholder engagement and technical analysis and studies.

We pride ourselves on being a service oriented, socially responsible, and diverse firm. We are a leader in technical excellence, technical innovation, and sustainability. Our sustainability vision is to positively contribute to the wellbeing of people and planet by enabling a culture of caring. At AECOM, sustainability is at the core of what we do and how we operate, and we have chosen to base our Sustainability Strategy around an Environmental, Social and Governance (ESG) framework. This was developed following consultation across our operations, end markets and geographies and was felt to best frame our approach to sustainability including our actions and how we report against those actions. One of our recent achievements was that AECOM became the first United States-based engineering company to have approved emissions reductions targets backed by climate science through the Science Based Targets Initiative (SBTi).

Learn more about AECOM's sustainable legacies and ESG strategy: Sustainable Legacies.

Whether AECOM is reducing greenhouse gas emissions, developing new ways to conserve water or promoting renewable energy, our commitment to sustainability drives innovation, resilience, risk reduction and provides attractive project life cycle returns on investment for our clients and our own operations. AECOM remains atop Engineering News- Record's (ENR's) list of the Top 500 design firms. Our multidisciplinary team is strategically deployed in offices across the Americas and worldwide. AECOM's unique perspective brings together global resources with local expertise. Our goal is to provide exceptional and high quality professional and technical services using creative solutions for all challenges, large and small. We live and work where our clients do, and whether it's a big city or small community, we are committed to creating a better world.

AECOM's Equal Employment Opportunity and Nondiscrimination Policies

AECOM is committed to providing equal employment opportunity, without discrimination, to all employees and qualified applicants for employment without regard to race, sex, pregnancy, age, ancestry, military or veteran status, color, religion, creed, disability, marital status, medical condition, genetic information, national origin, gender, gender identity, gender expression, sexual orientation, citizenship status or any characteristic protected by applicable state, federal or local laws.

Equal employment opportunity applies to all terms, conditions and privileges of employment, including, but not limited to, recruitment, hiring, compensation, training, promotion, demotion, transfer, termination, benefits, transfers to standby or part-time variable status, and retirement. For further reference, please visit US Employee Handbook.

ABOUT AECOM

AECOM Technical Services, Inc., a corporation, is a fully integrated professional and technical services firm with 51,000 employees in 150 offices. AECOM is the global infrastructure leader, committed to delivering a better world. As a trusted professional services firm powered by deep technical abilities, we solve our clients' complex challenges in water, environment, energy, transportation and buildings. Our teams partner with public- and private-sector clients to create innovative, sustainable and resilient solutions throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. AECOM is a Fortune 500 firm that had revenue of $16.1 billion in fiscal year 2024. Learn more at aecom.com.

Ownership: AECOM Technical Services, Inc. is a wholly owned indirect subsidiary of AECOM**,** a Delaware corporation whose stock is publicly traded on the New York Stock Exchange (ACM/NYSE).

Legal Entity Name:
AECOM Technical Services, Inc.

Legal Organization: Corporation

Federal Tax ID:
95-2661922

State and Date of Incorporation:
California - September 29, 1970

Corporate Address:
300 South Grand Avenue, 9th Floor
Los Angeles, CA 90071

Local Business Address (office responsible for providing services):
999 Town and Country Rd
Orange, CA 92868

Main Point of Contact:
Calum Thompson, PE, CEM, LEED AP, ENV SP
Associate Principal, High Performance Buildings + Communities
310-467-7083
calum.thompson@aecom.com

Authorized Representative:
Garrett Harper
Vice President, Managing Principal
312-373-7601
garrett.harper@aecom.com

AECOM's Pledge to Equity, Diversity and Inclusion

Equity, Diversity & Inclusion (ED&I) is central to AECOM's vision: ***A world where infrastructure creates opportunity for everyone.***

Equity, diversity and inclusion are core to our vision — a world where infrastructure creates opportunity for everyone. Our commitment to equity, diversity and inclusion enables us to help our communities and drive innovation that propels our industry forward and allows us to THRIVE.

Infrastructure creates opportunity for everyone

Equity: We recognize that we don't all start from the same place because advantages and barriers exist. We aim to correct the imbalance, ensuring that everyone has access to the same opportunities for professional development, career advancement and business opportunities.

Diversity: We strive to be as unique as the communities we serve. Diversity of ideas, perspectives and backgrounds is critical for business success. The ways in which we differ (visible & invisible) fuel innovation and give us competitive advantage.

Inclusion: We are fostering an environment of respect and belonging, where we are free to be our whole selves, every voice is welcome and valued and we are enabled to do our best work.

TAKING ACTION

Building Diverse Talent: To tackle the world's most complex challenges, we attract, hire, and develop talented people of all backgrounds, and ensure inclusivity and fairness in our sourcing, interview and hiring processes. Through our partnerships with nonprofit organizations and universities, we offer robust internships, graduate development programs and volunteer opportunities that help give underserved populations access to STEAM education.

Expanding Understanding: To help every employee feel valued and included, we're creating an inclusive workplace through community- building, training and family-friendly benefit policies. We conduct regular employee surveys and "real talk" discussions to understand our employees' experiences and provide a forum for deeper understanding and empathy. Our employee resource groups create a sense of belonging and lead community outreach, and strategic mentorships promote ongoing dialogue and heightened awareness.

Enriching Communities: Our Blueprint for a Better World platform reflects our responsibility to champion equity, diversity and inclusion in our communities through pro-bono work, volunteerism, philanthropy and strategic partnerships with global nonprofit organizations like Engineers Without Borders and Water for People. We deepen our engagement with communities through our commitment to supplier diversity, providing leadership to ensure that diverse-owned businesses are supported and successful.

Thinking Without Limits: Fostering equity, diversity and inclusion can't be done in a silo. By cultivating a workforce that more closely represents our clients and the communities we serve, we are able to better anticipate and respond to their needs. Further, we prioritize the social impact and benefits of equity, diversity and inclusion, factoring in these considerations into every project we pursue and the innovative solutions we deliver.

FEMALE RECRUITMENT EFFORTS

At AECOM we continue to make progress on gender diversity targets, including the achievement of our 20% target for women in leadership roles, while continuing to progress against our 35% target for our overall workforce.

AECOM's current women representation of executives and C-suite employees, are shown the following chart. Some additional information it's available online at Board of Directors.

	Women	Overall	% Women
Total	33	156	21.2%
	31	156	19.9%
SEC16	1	4	25.0%
	2	6	33.3%
E	32	152	21.1%
	29	150	19.3%

Please refer to Appendix C, for any other additional information and relevant factors that should be considered by WRCOG in evaluating the Proposal.

E Approach & Understanding of the Scope of Work Plan

UNDERSTANDING OF THE PROJECT AND WRCOG NEEDS AND REQUIREMENTS

The Western Riverside Council of Governments operates as a collaborative regional body addressing critical issues affecting its member agencies, including cities, county entities, and utilities. Faced with mounting challenges such as climate change, population growth, and the increasing frequency of power outages caused by extreme weather events, WRCOG is committed to advancing energy resilience and community preparedness. This proposal by AECOM responds to the four critical areas of focus that align with WRCOG's strategic priorities: Microgrid Feasibility Studies, Community Resilience Center Feasibility Studies, Financing Strategies, and an Implementation Plan.

Microgrid Feasibility Studies

Microgrids are integral to WRCOG's vision of enhancing energy resilience for its member agencies. These localized energy systems can operate independently or in conjunction with the main power grid, providing a reliable power source during outages. The feasibility studies will identify the technical, operational, and economic viability of implementing microgrids at critical facilities owned by WRCOG's member agencies. Our approach highlighted below will address WRCOG members concerns of the impacts that power outages have on critical facilities, ensuring member agencies are provided with a feasibility study that will:

- Assess the existing infrastructure and its suitability for integrating renewable energy sources and battery storage systems.
- Evaluate the potential energy demand, system design requirements, and environmental considerations.
- Prioritize facilities based on their operational importance, social vulnerability, and exposure to physical hazards.

Community Resilience Center Feasibility Studies

Recognizing the need to support residents during both normal operations and disasters, WRCOG seeks to establish Community Resilience Centers (CRCs). These centers would provide essential services, shelter, and access to energy resources during emergencies. To address these requirements AECOM will develop feasibility studies for individual CRCs, ensuring the following key criteria areas are included:

- Analyze the capacity of existing member agency-owned facilities to serve as CRCs.
- Evaluate site-specific requirements, including retrofitting needs, energy generation potential, and accessibility considerations.
- Identify the resources and services required to support vulnerable populations during extreme events.

Funding and Financing Strategies

We understand that WRCOG's resilience plans are only as good as its ability to implement them. Implementing microgrids and CRCs will require member agencies to consider new and, potentially, innovative approaches to funding, financing, and project implementation. As a key requirement of WRCOG's mission to provide solutions to meet member agencies critical needs, including support with resources, AECOM will provide a financing strategy that will:

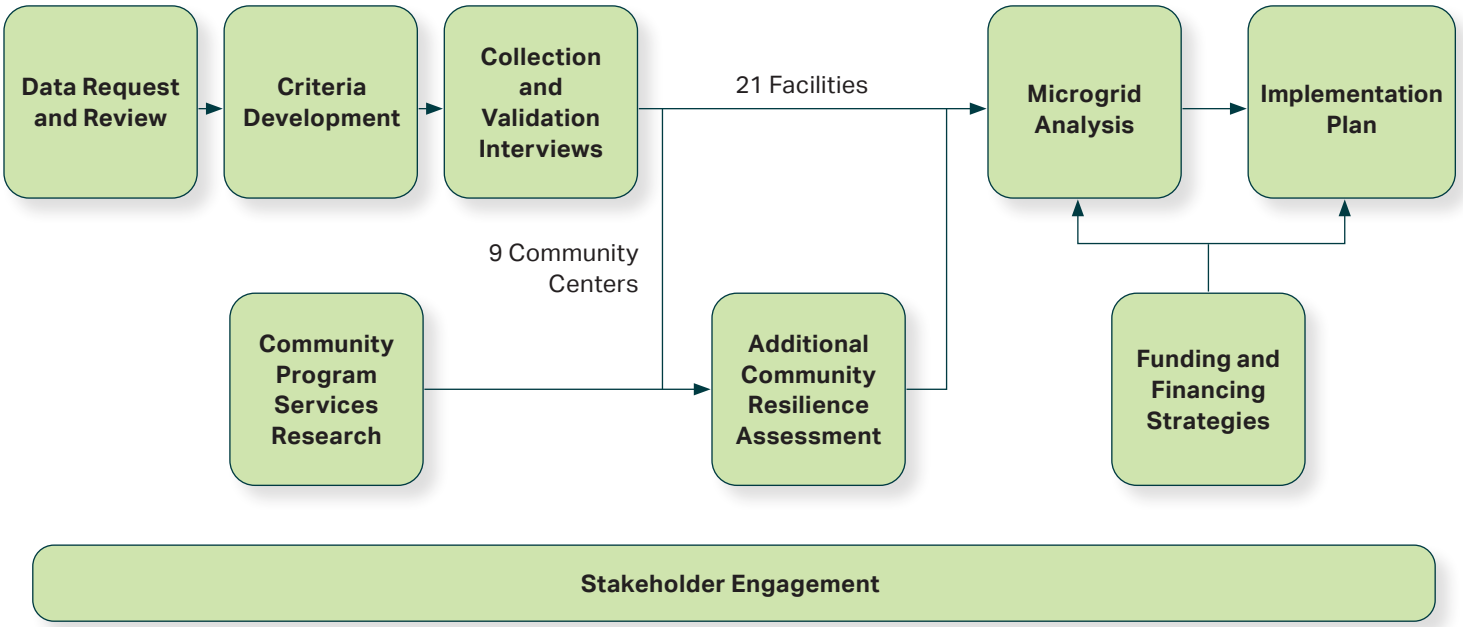
- Identify relevant funding opportunities, including federal and state grants, public-private partnerships, and low-interest financing options.
- Explore cost-sharing models that equitably distribute expenses across stakeholders.
- Develop a roadmap for leveraging utility incentives and renewable energy credits to offset costs.

Implementation Plan

To translate feasibility studies and financing strategies into actionable outcomes, WRCOG requires a comprehensive implementation plan. This plan must:

- Outline a phased approach to project execution, detailing timelines, responsibilities, and milestones.
- Incorporate stakeholder engagement strategies that align with community needs and priorities.
- Establish monitoring and evaluation frameworks to track progress and measure the impact of implemented solutions.
- Provide guidance on scaling successful projects across the WRCOG subregion.

Our approach to completing these tasks is summarized in the following diagram:



To meet the challenges posed by this project, our work plan is built on a detailed approach that will deliver each member agency actionable studies through combination of our engineering expertise, economics advisors, stakeholder engagement approach and regulatory experts. Although the focus is on the development of engineered feasibility studies, development of a solution to fund and implement these is critical and AECOMs approach will provide actionable studies with lay the groundwork for the effective implementation of microgrids & CRCs across member facilities.

WORK PLAN APPROACH

Task 1 – Microgrid Feasibility Studies

AECOM will provide a detailed and proven approach to develop microgrid feasibility studies that will cost effectively meet WRCOG needs. Our phased approach is proven to deliver successful studies, and has been utilized on multiple completed and ongoing projects, including our work with

A feasibility study evaluates both the technical and financial viability of a project. It begins with a request for key information, such as facility load data (8760 hours), utility tariffs, schematics, and system capacity (e.g., ampacity). Using this information, the study follows these general steps:

1. **Technical Analysis:**
    a. Calculate potential energy generation based on existing technologies and available resources (e.g., solar PV and BESS, using tool software such Homer Grid, Helioscope etc).
    b. Assess energy offset and identify potential energy excess for sale or storage.
    c. Evaluate system resilience, operability, and integration with current infrastructure and regulations (Rule 21, UL 1741, etc.).
2. **Market and Financial Assessment:**
    a. Identify an appropriate energy market and utility tariff structure for the project.
    b. Evaluate applicable financial incentives (e.g., ITC, state programs like SGIP) and funding strategies (direct or indirect).
    c. Analyze the overall rough order of magnitude (ROM) project cost and calculate the return on investment (ROI).
3. **Final Conclusion:**
    a. The study concludes by determining whether the project is technically and financially viable. If the analysis shows promising results, stakeholders can move forward with detailed design and implementation planning. Otherwise, the study advises against pursuing the project to avoid technical or financial challenges.

This structured approach ensures informed decision-making, balancing technical feasibility with financial sustainability.

Stakeholder Interviews

To implement microgrids cost-effectively, AECOM will engage WRCOG member agencies to understand facility needs, key concerns, and goals. By collaborating with stakeholders, AECOM will gather insights into current and future operations, proposed solutions from those most familiar with existing operations, and identify Key Performance Indicators (KPIs) to use when assessing microgrid options. This approach allows the microgrid design to meet performance requirements and aligns with WRCOG's needs.

AECOM will begin with stakeholder questionnaires at project kickoff to identify priorities, followed by detailed interviews to refine operational requirements and understand existing resiliency threats that each microgrid must mitigate. This process captures diverse input while allowing focused assessments from those most familiar with facility needs.

Performance Requirements

Through this collaboration with WRCOG member agencies the AECOM team will develop a comprehensive list of requirements that the microgrids must meet . These will include specifics such as what critical loads the microgrids must support, how long the microgrid must support these and whether there are any state and/or federal requirements that the microgrid must meet. These requirements become the criteria that the microgrids must operate to.

Microgrid integration rules vary by state, but California stands out with a well-established framework for microgrid deployment. This framework has served as a model for other states to follow.

General California Technical Requirements for Microgrid Integration

- Rule 21: Governs interconnection, operation, and metering for distributed energy resources (DERs).
- UL 1741 SB: Certification for inverters ensuring advanced grid support capabilities.
- Smart Inverter Functions: Inverters must support autonomous grid functions like voltage regulation, frequency support, and ride-through, per the Smart Inverter Working Group (SIWG) recommendations.
- Communication Protocols: Must use IEEE 2030.5 for secure communication with utility systems.
- Utility Coordination: Follow interconnection procedures outlined by local utilities.

Energy Load Analysis

The first step in our analysis is to evaluate existing energy loads and projected future demands for each facility. AECOM will analyze 15-minute electrical interval data to create detailed annual load profiles, providing a baseline for current usage. Recognizing that a successful microgrid must support future needs, we will also account for potential increases in demand, such as all-electric buildings, EV charging, and renewable energy integration.

Future Load Development

As our facilities evolve it is anticipated that electrical loads will shift greatly. Building electrification and EV charging will increase electrical loads, whilst incorporated of Distributed Energy Resources (DERs) will reduce and shirt building loads.

Building Electrification: our high-performance building will determine the impact that a future all-electric building will have on WRCOG facilities

EV Charging Systems: As WRCOG member agencies transition their fleets to all-electric and EVs are adopted by the wider community, providing necessary charging infrastructure will be critical to help meet the needs of the community. This adoption will greatly impact building electric loads, and AECOMs engineers will include the impact of these in future load profiles in the analysis

Distributed Energy Resources: As all-electric and EV charging systems increase electrical loads, introduction of DERs will shift and reduce loads. AECOM will identify potential solar photovoltaic (PV) system capacities at each site and estimate the annual generation from these through modeling software's such as Helioscope. Our energy engineers will take these generation profiles into our custom tools that will cost effectively size (kW and kWh) battery energy storage systems (BESS). Utility rate structure will be analyzed to assess how DER deployment will impact energy costs, along with their resilience and environmental impacts. An updated DER load profile will then be incorporated into the modeling to finalize the anticipated future asset energy demand profile.

Critical Load Development

There is no universal rule for determining how much load and for how long a microgrid should support critical loads. However, guidelines exist to help define the critical loads that need to be supported, depending on the specific needs of the customer. Critical loads vary based on the site's priorities; for instance, an office building and a wastewater treatment plant will have distinct requirements that must be identified by local stakeholders.

Below are general guidelines and examples of typical critical loads:

- **NFPA 110:** Addresses emergency and standby power systems, including critical load considerations for essential infrastructure.
- **Federal Energy Management Program (FEMP):** Advises evaluating critical loads during microgrid design to ensure reliable power for essential functions.

Having identified the critical loads in earlier phases the AECOM team will quantify these and determine the overall

uninterruptable loads that the microgrid must serve. The outcome from this process will be an understanding of the load (kW) and energy (kWh) requirements that the microgrid system must be designed around

Infrastructure Assessment

The feasibility and cost of integrating a microgrid largely depend on a facility's existing electrical infrastructure. Necessary upgrades may add complexity and existing infrastructure capabilities may guide optimal microgrid. AECOM will analyze electrical single-line diagrams and conduct site assessments to determine an effective configuration for powering critical loads and identify system limitations. This analysis will optimize DER integration, reduce costs, and provide recommendations for required infrastructure upgrades.

Microgrid Modeling

Once future critical loads are determined the AECOM team will utilize a combination of microgrid modeling software and internal AECOM tools to simulate the operations of the microgrid during both regular and power outage periods. Through modeling different DER systems and critical facility loads, systems will be sized to meet the performance requirements of the microgrids. This analysis will include analysis of the facility during regular operations assist in sizing DERs to optimize financial performance through peak load shifting, whilst also meeting KPIs. Modeling will provide preferred design configurations that can proceed into conceptual design studies

An in-depth analysis of funding and financing opportunities will be undertaken during Task 3 and incorporated into the microgrid feasibility studies, which will include financial modeling in addition to microgrid energy modeling. The financial model of a microgrid begins with identifying the optimal market for energy trading, which depends on the state, utility regulations, applicable tariffs, and the volume of energy being traded. For small-scale microgrids, California's NEM 3.0 (Net Energy Metering) is often the more viable option, while larger producers may benefit from Corporate PPAs (Power Purchase Agreements).

By combining government incentives, state programs, and strategic market positioning, microgrid projects can be effectively financed to deliver both feasibility and long-term cost stability.

Conceptual Design Options

With a detailed understanding of the requirements of the microgrid, the loads it must serve and the existing infrastructure, AECOM will determine conceptual microgrid options for each of the 21 facilities. Approximate DER system capacities and locations will be identified, and existing single line diagrams updated to reflect the necessary upgrades required to accommodate the microgrid. The conceptual design narratives will provide system components, sizes, locations and detail the interconnectivity of the microgrid controller with existing building and utility infrastructure. Guidelines will also be provided on operational considerations during both normal operation and power outage conditions.

Task 1 Deliverables

- Draft and Final: Twenty-one microgrid feasibility studies providing conceptual solutions to meet WRCOG member agency resilience needs .

Task 2 – Community Resilience Center Feasibility Studies

The AECOM team recognize that one of the key areas of focus for this effort is in furthering the resilience of facilities to maximize the benefit to the wider community. The focus of Task 2 is on community centers and expanding the resilience assessments beyond microgrid feasibility to include facility accessibility, physical resilience and to identify and evaluate the community support services and programs that the facility may provide.

The proposed AECOM core team includes specialists in asset advisory, climate adaptation and resilience and social equity, all of whom bring expansive applicable experience in each area of the community resilience feasibility studies. We have conducted over 1,000 buildings in California for ADA compliance and have provided facility resilience assessments across Santa Clara County's healthcare portfolio. Our experience includes developing community resilience frameworks and programs for government agencies including for Southern California Association of Governments (SCAG) and the Texas General Land Office (GLO). Together, our team has identified an integrated approach of review and engagement that will provide the breath of assessment with sufficient tangible project and program recommendations to inform the implementation plan.

Our approach to Task 2 for the nine targeted community centers will be conducted in parallel to the microgrid feasibility studies in Task 1, with several steps overlapping, such as the stakeholder engagement processes. To facilitate the resilience center feasibility assessment, the AECOM team will first develop a set of criteria, which will be validated with the WRCOG core team, which will be used aid the review of each facility and identify key gaps or existing issues. These reviews will be undertaken in two parts:

Part 1: Data request and review – In addition to the data requests for microgrid feasibility assessment, the community resilience center feasibilities studies will require a complete set of architectural building drawings to aid in the Building and Landscapes assessment. The physical facility criteria including ADA compliance (e.g. entryways and bathroom accessibility), HVAC system requirements, and physical hazard vulnerabilities will be initially evaluated by reviewing the

received drawing sets. As with Task 1, this desktop review will also determine the existing electrical and water infrastructure, and spatial availability and configuration for potential improvement projects.

Part 2: Stakeholder interviews – Following the data review, the stakeholder interviews will look to both validate the primary criteria evaluation and fill in the remaining data gaps. It is anticipated that the interview will provide the majority of the required operational requirements (including and existing power, water, and communication needs) and map them to the service levels that the facility could perform. The AECOM team will have specific questions to facilitate the required data collection in a consistent manner. This may be augmented by a pre-survey prior to the meeting.

The AECOM team will build on outcomes of the community engagement workshops conducted by WRCOG staff and Grid Alternatives and conduct research of applicable services and programs prior to these meetings. This will allow the interviews to also be leveraged as an opportunity to gather feedback on potential programs and services that could be provided at the facility.

The result of these efforts will be a comprehensive summary of existing performance and resilience gaps across criteria for the nine community centers. There will be a comparison matrix, summarizing their relative performance, and facility-specific memos which will lay out in more detail the findings of the assessment, the gaps and focus areas, and recommended projects.

Task 2 Deliverables

- A summarized community resilience memo for each assessed facility outlining performance against each resilience center feasibility criteria, summary of anticipated requirements and the gaps (and associated recommended initiatives) to close them.
- Draft and Final: Nine community resilience center feasibility studies

Task 3 – Financing Strategies

Building off the Funding and Financing Strategies developed for the Energy Resilience Plan, AECOM will develop a Financing and Business Plan that outlines funding and financing strategies to specifically support implementation of the microgrids and CRCs. Microgrids are capital-intensive systems, but various funding opportunities can significantly offset costs:

1. Tax Incentives: The Investment Tax Credit (ITC) provides a 30% tax credit, with additional bonuses of up to 10% for using local labor or U.S.-made materials.
2. State Programs: Programs like California's Self-Generation Incentive Program (SGIP) can provide funding for battery energy storage systems (BESS).
3. Private Financing through PPAs: For projects capable of generating energy at competitive rates, private companies may finance the project through PPA contracts, offering variants that can fully fund the project while securing long-term, stable energy tariffs.

By combining government incentives, state programs, and strategic market positioning, energy and community resilience projects can be effectively financed to deliver both feasibility and long-term cost stability. With WRCOG members spanning multiple jurisdictions and with varying levels of resources, our team understands that one solution may not fit for all and will identify a diverse array of funding opportunities that will meet WRCOG member agency needs. This Plan will provide a menu of funding and financing strategies along with key considerations about prioritizing strategies, combining strategies, and phasing.

AECOM will consider the following:

- Local, state, and federal grants and incentives (and will highlight those that may be affected by recent state and federal ballot and election results)
- Utility-backed programs
- Private funding and financing, including energy savings performance contracting (ESPC)
- Local revenue sources, including potential of existing revenue sources
- Financing options, such as bonds and loans

Task 3 Deliverable

- Memo (up to 10 pages) outlining funding and financing strategies, including key considerations and steps for developing a tailored strategy for each project.

The Consultant will develop an Implementation Plan that can be used by WRCOG member agencies to implement the microgrids and community resilience centers identified in the Energy Resilience Plan 2.0. The intent of the Implementation Plan is to provide information and steps to WRCOG member agencies so they can implement the projects identified in the Energy Resilience Plan 2.0. The Implementation Plan should include enough information to help inform the WRCOG member agency in the development of solicitations for further studies, construction, and analysis necessary to develop construction documents. The Implementation Plan shall identify milestones and provide an outline of the multi-step development process of a microgrid, including approvals, agreements, contracting, construction stages, plans and procedures, reports and studies, and commissioning needed to implement the microgrids and community resilience centers. The Implementation Plan shall include a list of

potential contractors and/or consultants that are experienced with developing microgrids and/or community resilience centers.

Task 4 – Implementation Plan

AECOM will develop a detailed and actionable Implementation Plan to support WRCOG member agencies in advancing the microgrids and community resilience centers identified in the Energy Resilience Plan 2.0. This Implementation Plan will serve as a practical roadmap, enabling member agencies to navigate the complex processes required to bring these projects from concept to realization.

From experience, microgrids and similar projects are typically implemented via two pathways:

1. **Design Build:** Engineer provides schematic design documentation until a 30% level, at which the project is bid by a design-build contractor
2. **Design Bid Build:** Engineer provides fully permitted documentation to the 100% level, at which point the project is bid to contractors. Engineer supports construction through construction administration

AECOM has experience with both delivery methods, with the first being undertaken at Santa Rosa and the second for the Veolia Rialto Wastewater Treatment Plan, where AECOM is providing full design documentation. Both delivery methods however require close coordination between engineers, contractors and WRCOG, thus AECOM will provide WRCOG with an implementation plan that will outline the critical activities, resources, anticipated timeframes and case studies that its member agencies can reference for support during implementation. This will include a detailed overview of the key aspects at each stage of the implementation process, once the feasibility studies are complete. The plan will outline in clear detail the findings from Task 3, and provide additional context and resources to provide WRCOG member agencies staff training and programs required for the procurement and operations of complex systems.

General Assumptions

- This proposal is contingent upon successful negotiation of mutually acceptable terms between AECOM and WRCOG
- All cost estimates are high-level ROM.
- Preliminary cost estimates are for equipment and project deployment costs.
- Current Tariffs and Market Prices are based on the energy tariff and market prices available at the time of the feasibility study.
- Economic Trends will utilizes available data on inflation and interest rate trends at the time of analysis.
- AECOM will not participate in community engagement workshops conducted by WRCOG staff.
- AECOM is entitled and will rely upon the accuracy, completeness, currency and non-infringement of information and data provided by WRCOG or obtained from generally accepted sources within the industry, except to the extent such verification by AECOM may be expressly required as a defined part of the services herein. AECOM will not be responsible for defects in its services attributable to its reliance upon or use of such information and data.
- The data provided for the Community Resilience Center assessments must be of sufficient quality for assessment, no additional time is assumed for site assessment or repeated follow-up over the time required for microgrid feasibility assessment site work
- No costing will be provided for the resilience interventions required outside of the microgrid feasibility.
- Funding and Financing analysis will be informed by desktop research
- Funding and financing strategies will be confirmed with the client before continuing research and evaluation.

Project Schedule

Project Details	Feb			Mar					Apr				
	10	17	24	02	09	16	23	30	06	13	20	27	04
TASK 0: PROJECT MANAGEMENT													
Kick-off meeting	◆												
Bi-weekly PM Meetings													
TASK 1.0: MICROGRID FEASIBILITY STUDIES													
Data Request & Review													
Stakeholder Interviews													
Energy Load Analysis													
Infrastructure Assessment													
Microgrid Modeling													
Conceptual Design Options													
DRAFT Deliverable: (21) Microgrid Feasibility Studies													
WRCOG Review													
FINAL Deliverable: (21) Microgrid Feasibility Studies													
TASK 2: COMMUNITY RESILIENCE CENTER FEASIBILITY STUDIES													
Assessment Criteria Development													
Data Request & Review													
Stakeholder Interviews													
Performance Documentation and Strategy Recommendations													
DRAFT Deliverable: (9) Community Resilience Center Feasibility Studies													
WRCOG Review													
FINAL Deliverable: (9) Community Resilience Center Feasibility Studies													
TASK 3: FINANCING STRATEGIES													
Research and Literature Review													
Stakeholder Interviews													
DRAFT Deliverable: Funding and Financing Memo													
WRCOG Review													
FINAL Deliverable: Funding and Financing Memo													
TASK 4: IMPLEMENTATION PLAN													
Research and Literature Review													
Mapping Mechanisms and Action Plans to Projects													
DRAFT Deliverable: Implementation Plan													
WRCOG Review													
FINAL Deliverable: Implementation Plan													

◆ Key Milestone

Project Schedule (Continued)

Overall Schedule	Alex Mitoma	Lilian Nguyen	Calum Thompson	Edgar Zavala
TASK 0: PROJECT MANAGEMENT				
Kick-off meeting	●	●	●	●
Bi-weekly PM Meetings	●	●	●	
TASK 1.0: MICROGRID FEASIBILITY STUDIES				
Data Request & Review				●
Stakeholder Interviews		●		●
Energy Load Analysis				●
Infrastructure Assessment				●
Microgrid Modeling				
Conceptual Design Options			●	●
DRAFT Deliverable: (21) Microgrid Feasibility Studies			●	●
WRCOG Review				
FINAL Deliverable: (21) Microgrid Feasibility Studies			●	●
TASK 2: COMMUNITY RESILIENCE CENTER FEASIBILITY STUDIES				
Assessment Criteria Development			●	
Data Request & Review				
Stakeholder Interviews		●		
Performance Documentation and Strategy Recommendations				
DRAFT Deliverable: (9) Community Resilience Center Feasibility Studies			●	
WRCOG Review				
FINAL Deliverable: (9) Community Resilience Center Feasibility Studies				
TASK 3: FINANCING STRATEGIES				
Research and Literature Review				
Stakeholder Interviews		●		
DRAFT Deliverable: Funding and Financing Memo				
WRCOG Review				
FINAL Deliverable: Funding and Financing Memo				
TASK 4: IMPLEMENTATION PLAN				
Research and Literature Review				
Mapping Mechanisms and Action Plans to Projects				●
DRAFT Deliverable: Implementation Plan				●
WRCOG Review				
FINAL Deliverable: Implementation Plan				

Key Staff								
Salim Moslehi	Abinet Eseye	Chris Houck	Tatum Lau	Chris Hyun	Karl Metz	Emily Schwimmer	Rachel Dec	Sananda Mukherjee
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Quality Control

To support the City's Quality Control Plan, AECOM will provide the scope of professional services with a commitment to quality. Quality is an attitude, a culture and a way of life at AECOM. It is part of everything we do, every day. It is inherent in the way we plan, do, check and act to produce the work we perform for our clients, both internal and external.

AECOM offers the County of Los Angeles a proven quality management system (QMS) that is certified to the internationally renowned ISO 9001:2008 standard, yet sufficiently flexible to address the specific requirements of this project. Quality assurance and management is central to our project management approach and our project team includes individuals assigned to specific quality roles under our system. The general components of AECOM's approach to project quality assurance / management and the parties responsible for them, are depicted below.

Initiating Quality. Quality begins with AECOM's understanding of your project goals and objectives, emphasizing communication with the City of Mountain View and a thorough review of project inputs. Assigning technically qualified and experienced personnel to produce and review the work is an important next step. Our initial planning and scheduling activities, including defining the various project work tasks and associated quality activities, are foundational to a successful project.

Producing Quality. AECOM requires a project plan on all projects to define key parameters and guide the work of the team. The plan is discussed at the project team kickoff meeting and updated as needed to inform the team of new developments. As work proceeds, a number of critical quality assurance technical activities are undertaken, including

- Proper application of codes, standards and planning / design criteria, including County of LA and state requirements
- Ongoing oversight and supervision for accuracy and completeness as work proceeds
- Distribution of in-progress documents at defined intervals for quality review
- Coordination among disciplines
- Verification of compatibility and consistency among document types, such as policies, drawings and specifications
- Resolution and closure of in-progress review comments

Confirming Quality. While it is important to build quality into the work as it is performed, formal checking and review are critical QMS activities. Quality checking activities, which are all documented with two-level approvals, include:

- Checking studies / reports / documents for content, logic, clarity and soundness of recommendations, as well as grammar, punctuation and format
- Checking calculations to verify correctness and completeness, methodology, selection of software, application of standards and codes and general approach

Delivering Quality. All deliverables undergo a final verification check before they are submitted. A lead verifier evaluates the deliverable for completeness and consistency, adherence to quality requirements and resolution of comments. The lead verifier then signs a Technical Quality Review Record and transmits it to our Program Manager, who is then responsible for the final overlook, approval and submittal. This final independent evaluation assesses the submittal's state of readiness, without diminishing the Project Manager's accountability for the quality of the work being released. As a check-and-balance activity, this review pairing helps AECOM consistently deliver quality and value to our clients.

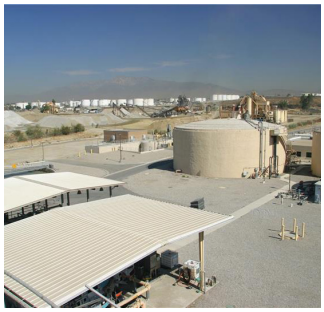
F Detailed & Itemized Pricing

The below fee reflects the requested scope of work, inclusive of the 12 microgrid feasibility studies and the 9 community resilience center feasibility studies. We have not included the provided "Attachment E - Activities and Cost Matrix" because our scope of work is covered in our proposed the fee. However, AECOM can provide a fee for microgrid design services for any of the facilities, if requested at a later date.

Task	Hours	Fee
Task 0: Project Management	88	$15,521
Task 1: Microgrid Feasibility Studies	520	$102,524
Task 2: Community Resilience Center Feasibility Studies	172	$31,639
Task 3: Financing/Business Plan	60	$10,077
Task 4: Implementation Plan	108	$15,017
Total		**$174,778**

AECOM can provide 30% / 100% design for any of the facilities for a fee to be scoped.

References



CITY OF RIALTO WASTEWATER TREATMENT PLANT MICROGRID

Chandrasekar Venkatraman (CV), P.E., PMP, CFE
President of Capital Program Management
Municipal & Commercial Business
Veolia North America
4160 Temescal Canyon Road, Suite 311, Corona, CA 92883
Phone: 909-820-3771
Cell: 909-341-8246
Email: chandrasekar.venkatraman@veolia.com

SANTA ROSA, CITY-WIDE RESILIENCY, DECARBONIZATION AND DISTRIBUTED ENERGY RESOURCES STUDY

Douglas A Williams
Facilities Maintenance and Operations Coordinator
Transportation and Public Works Department
City of Santa Rosa
69 Stony Circle , Santa Rosa, CA 95401
Phone: (707) 543-3712
Email: dwilliams@srcity.org

LARGE SCALE DEPLOYMENT OF DISTRIBUTED ENERGY RESOURCES AND MICROGRIDS ON MUNICIPAL FACILITIES

Keith Chow
Associate Engineer
City Facilities Architectural Services Division
Department of Public Works
City of San Jose
200 East Santa Clara Street, City Hall, 6th Floor, San Jose, CA 95113
Cell: 408-535-8101
Email: Keith.Chow@SanJoseCA.Gov

Project Team Staffing

We have created a team that has robust experience delivering the scope requested by WRCOG, and has a history of successfully Working on the WRCOG ERP.

The following pages contain resumes for our proposed staff highlighting their relevant experience and suitability to their role. For the best of our knowledge, we affirm that no employees working on the engagement have ever been convicted of a felony.

AECOM

Calum Thompson, PE, CEM, LEED AP BD+C, ENV SP

PROJECT DIRECTOR

Education
Master of Engineering Enviro-Mechanical Engineering, University of Strathclyde, Glasgow, Scotland

Registrations/Certifications
Professional Engineer (Mechanical), CA, #M37038

AEE Certified Energy Manager

LEED Accredited Professional – Building Design and Construction

ISI Envision Sustainability Professional

Professional Affiliations
Californian Association of

Professional Engineers,

Geologists and Geophysicists

Member, ASHRAE

Member, U.S. Green Building Council (USGBC)

Calum Thompson leads AECOM's High Performance Buildings & Communities team in California. A licensed mechanical engineer, Calum specializes in strategic energy planning where he applies his technical background to the assessment of building energy demand, renewable energy, district energy, and microgrid systems at a campus and community scale.

Over the past decade Calum has led the development of energy plans for campuses, agencies, and governments across the US, including for These plans focus upon developing strategies that thread together both resilience and decarbonization to meet the unique requirements and aspirations of federal campuses. Calum has published some of these lessons learned in an ASHRAE paper entitled "Energy Master Planning for Resilient Public Communities --Best Practices from US Military Installations".

Project experience

Western Riverside County of Governments, Energy Resilience Plan, Riverside, CA. Project Manager. AECOM assisted the Western Riverside Council of Governments (WRCOG) with the development of an energy resiliency plan to support their members in response to power interruptions resulting from events such as wildfires, extreme heat, or Public Safety Power Shutoffs (PSPS). The Project provides a framework that enables WRCOG and its member jurisdictions to identify and prioritize a combination of facility, community, and infrastructure investments such as local generation, microgrids, and energy storage systems to improve regional resilience. Calum was the Technical Director and Project Manager for this effort.

City of Berkeley, Berkeley Energy Assurance Transformation, Berkeley, CA. Technical Analysis Lead. Development of a microgrid in the City of Berkley, CA to improve resilience of public buildings. Calum led the technical feasibility assessment of the proposed microgrid by assessing the various combinations of distributed energy resources such as solar PV and diesel generators with a centralized battery system in order to identify the optimal configuration. The key performance goals were to meet critical demand and allow the public buildings to act as emergency shelters for extended periods during grid outages.

University of California Merced, Energy Master Plan, Merced, CA. Technical Lead and Project Manager. Calum led the development of an Energy Master Plan for UC Merced. UC Merced is striving to achieve its commitment of net zero energy, carbon, and waste and improve the resilience of its energy systems. AECOM was engaged by the university of develop a plan to support the achievement of these goals through the identification cost-effective infrastructure improvements (with a focus on a campus microgrid), energy conservation, and on-site generation strategies.

University of California, Riverside, Campus Decarbonization Study, Riverside, CA. Technical Lead. In response to University of California (UC) climate action goals, UC Riverside commissioned a decarbonization study to identify pathways to transition away from on-campus fossil fuel use, eliminating associated GHG emissions. Calum led the team in the evaluation of options to replace the existing campus steam system which included life cycle cost assessment and the development of a preferred phasing plant to achieve net zero emissions by 2045.

U.S. Air Force, Installation Energy Plans. Technical Lead The Air Force partnered with AECOM to develop their Installation Energy Plan (IEP) approach and subsequently run the program. The IEPs provide clear guidance on how installation energy resilience can be improved by focusing on mission resource needs, local threats, and key gaps in existing posture. Calum was technical lead in the development of resilience projects and the resultant roadmap for improved installation resilience. The effort included developing microgrid projects for over 10 installations.

San Diego Gas and Electric, Net Zero Strategy, San Diego, CA. Project Manager. The AECOM team, led by Calum, is supporting SDG&E Facilities team – consisting of 61 buildings over 17 locations - with the development of their first Net Zero Strategy. The strategy summarizes SDG&E's current facility operations and performance, articulates its goals and targets, quantifies energy, water, and waste strategies, describes regulatory and financial mechanisms for implementation, and develops a prioritized roadmap for implementation. Work included ASHRAE level II auditing, on- and off-solar feasibility assessment, and energy management planning.

AECOM

Mushtaq Ahmed

PROJECT ADVISOR

Education
MS, Mechanical Engineering, Texas A&M University

BS, Mechanical Engineering, N.E.D University of Engineering and Technology (Karachi, Pakistan)

Mushtaq Ahmad has 20+ years of experience in the design, implementation, and construction of decarbonization, renewable energy and resiliency programs and projects for large industrial and commercial clients. He specializes in project development, business operations, design of energy/renewable energy systems, energy policy, building simulations, commissioning/ retrocommissioning, and building codes. He has extensive experience in working with California investor-owned utilities and municipalities to develop decarbonization offerings and projects.

Project experience

Western Riverside Council of Governments, Energy Resiliency Plan. Supporting a cross business line effort as a project advisor to develop a long-term energy resiliency plan for Western Riverside Council of Governments in Southern California which has more than 20 members. This project will assist the members in identifying energy related vulnerabilities and viable projects that can be deployed over the coming decade to increase operational resiliency and move the local community choice aggregator (CCA) to meet or exceed SB100 mandates.

City of Rialto Wastewater Treatment Plant Microgrid, Engineering and Design Services. Managed the implementation contract with the City of Rialto to develop and design a microgrid utilizing Solar PV, Batteries and digester gas engine as distributed energy resources. Once built, this $26 million microgrid project will be able to provide 80% resiliency to the plant operation and will reduce the utility costs significantly. The microgrid comprises o 1.6MW of solar PV, 2.5MWh of lithium ion batteries and a 360 kW digester gas engine as well as a complete electrical infrastructure upgrade for the plant

Confidential Client – Program Management and Design Services for Distribution Infrastructure and Resiliency Microgrid for mixed use development. Led the business development efforts and overseeing the program management for a 12 million sq ft mixed used development in Silicon Valley. The project includes the deployment of more than 10 MW of solar and 20 MWh of batteries. Once at full load, this will be the largest all electric developments in the US with a district-wide microgrid providing resiliency and assisting in meeting the client's 24/7 clean energy goals.

City of San Jose, Feasibility and Design of a two microgrids at a Zoo and a Community Center. Overseeing a consulting contract with the City of San Jose to conduct detailed feasibility studies and develop 100% design set for microgrids at the Happy Hollow Zoo and Roosvelt Community center. The design package includes solar PV, batteries and microgrid controllers with full islanding capabilities.

City of Santa Rosa, Microgrid Feasibility and Citywide Energy Efficiency Audits. Managing a consulting contract with the City of Santa Rosa to conduct detailed feasibility studies for deploying two microgrids for operational resiliency as well as analyzing more than 70 sites for the installation of renewables (solar PV), batteries and energy efficient infrastructure upgrades.

Los Angeles County Sanitation Districts, Joint Water Pollution Control Plant Upgrades. Led the business development efforts in securing a $42 million design-build performance contract to construct a new oxygen generation plant at a 300 million gallons per day wastewater treatment plant in Carson, California. This is one of the largest wastewater treatment plant in the United States and this project, which is currently in construction, will result in saving the Los Angeles County Sanitation districts more than $1.3 million in utility and maintenance costs per year and will significantly increase the resiliency and reliability of the plant operations.

Sacramento Municipal Utility District (SMUD), eFuel (Charging as a Service) Program. Led the business development efforts and currently managing the implementation of $4 million charging as a service offering for SMUD's commercial, fleet and multi-family customers. this program is a true-turnkey offering which provides support from project inception through advisory services all the way to engineering, design, procurement and installation of electric vehicle charging infrastructure with no upfront cost for the customer.

** Experience prior to AECOM*

AECOM

Alex Mitoma, PE, ENVSP

PROJECT MANAGER

Education
B.S. Environmental Engineering, B.A. English, University of Colorado Boulder

Registrations/Certifications
Professional Engineer, CA, 92604
Envision Sustainability Professional, 52799

Professional Affiliations
Young Professionals in Energy, Los Angeles

Alex Mitoma is a member of AECOM's Climate Advisory Services practice. He is a licensed engineer with a background in resilience planning, climate adaptation, and industry energy transitions.

Alex was recently recognized by Trellis Group as a 30 Under 30 honoree for his resilience work at the Port of Long Beach.

Project experience

Installation Energy Plans, U.S. Air Force, Various Locations. Program Manager, Technical Lead. Alex managed the Installation Energy Plan (IEP) program under the U.S. Air Force Office of Energy Assurance. IEPs are designed as platforms for informed energy planning, of utilities and building systems at the facility-, district-, and installation-scale, for the ever-evolving energy landscape of the service. IEPs are developed on an individualized basis for installations across the world. Plan development includes comprehensive stakeholder engagement, integrated site data collection and analysis, and near-term and long-term resilience strategizing.

Installation Energy Plans, Air National Guard, Various Locations. Program Manager, Technical Lead. Alex manages the IEP program for the Air National Guard under the National Guard Bureau. For the Air National Guard, in addition to the IEP, AECOM develops preliminary resilience project concepts for each installation in a DD Form 1391. This has included microgrids of various scales (e.g., campus, district, facility) and distributed energy resources (e.g., generation, storage).

Microgrid Design & Permitting, Confidential Client, CA. Regulatory Strategy Lead. As part of broader design consultation services, Alex provided strategic guidance for how to establish and operate microgrids within various regulatory landscapes and utility service territories. In this case, regulatory agencies relevant to this project, and with whom Alex has extensive experience, include the California Public Utilities Commission, the California Independent System Operator, the California Energy Commission, the California Air Resources Board, and the Federal Energy Regulatory Commission.

Infrastructure Modernization Program, Confidential Client, CA. Technical Lead. In support of the once-in-a-generation project to enable a major international airport's operational and economic growth of the next 30 years, led a precursory effort of the infrastructure planning and climate vulnerability assessment to identify and prioritize critical assets and their respective energy resource requirements.

Pilot Microgrid, Port of Long Beach, CA.* Deputy Project Manager. Alex served as the deputy project manager of the Port's first-ever microgrid, funded in part by a grant from the California Energy Commission. The installation was purposed to augment the port authority's critical security headquarters with resilient, zero-emission power. Alex's role comprised oversight of system design and commissioning, as well as grant agency and contractor management.

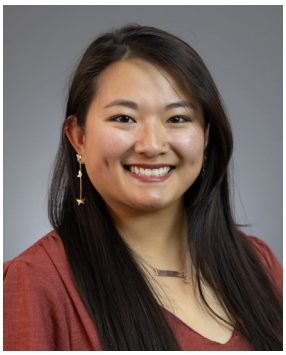
Clean Air Action Plan, Port of Long Beach, CA.* Program manager. With its Bureau of Planning & Environmental Affairs, Alex administered district-level energy planning programs, studies, and technology demonstrations in support of the Port's signature Clean Air Action Plan, the hallmark initiative for air quality improvements and sustainable freight movement. Contributions included a first-ever, district-level resilience appraisal of Harbor District electrical infrastructure, system design of the inaugural facility-scale microgrid at the Port, and management of grant-funded (state, federal) programs for demonstration of zero-emission (e.g., battery-electric, hydrogen fuel cell) stevedoring equipment.

Technology Advancement Program, Port of Long Beach, CA.* Program Manager. Alex administered of the Port's program to coordinate funding, guidance, and staff support to test promising zero-emission technologies and associated infrastructure in a real-world port environment.

Power Systems Resilience Assessment, Port of Long Beach, CA.* Project Manager. Alex oversaw the first-ever port-scale resilience and reliability assessment of Harbor District electricity infrastructure. This study was commissioned to assess infrastructure readiness for zero-emission operations pursuant to the Port's impending energy transition per the Clean Air Action Plan.

Fleet Transition Planning Software, Port of Long Beach, CA.* Project Manager. Funded in part by a grant from the California Energy Commission, Alex supervised of development of an open-source software forecasting tool for use by terminal operators. Tool functions included projection fleet transition costs, electric vehicle supply equipment costs, and anticipated terminal load profile from transition to zero-emission operations.

**experience prior to AECOM*



Lilian Nguyen, EIT, LEED AP BD+C, Ecodistricts AP, IAC Auditor

DEPUTY PROJECT MANAGER / ENERGY ANALYST

Education
BS, Energy Engineering (With Honors) Minor in Applied Mathematics, Indiana University-Purdue University Indianapolis

Registrations/Certifications
Engineer in Training (EIT)

LEED Accredited Professional (AP) BD+C

EcoDistricts AP

U.S. Department of Energy (DOE) Industrial Assessment Center Auditor

Professional Affiliations
Society of American Military Engineers (SAME)

Toastmasters International

IAC Women for Energy Efficiency (WE2)

Lilian is a sustainability consultant with the High-Performance Building and Community team. She specializes in energy master and resilience planning and modeling. In addition, she focuses on community and building sustainability addressing the triple bottom line (environment, economy, society). She develops renewable energy strategies with micro-grid ideologies; models campus-wide energy profiles and building systems; quantifies energy conservation measures; verifies compliancy with sustainable rating systems and more aligned with her clients' goals. Lilian carries her passion and dedication for achieving the best set of solutions to today's sustainability concerns.

Project experience

Energy Master Plan, San Diego County Regional Airport Authority, San Diego, CA. Energy Modeler and Analyst supporting San Diego's Airport Authority's energy program that envisioned to expand and improve in the near future. An energy master plan drew a roadmap of where the program currently is, where it can be in the future, and how that status can be achieved. The strategic plan emphasized how sustainable targets, related to resiliency, energy resources, and carbon emissions, can be achieved. Lilian modeled battery energy storage and solar PV strategies using an optimization tool that justified implementation. With additional sustainable practices, the plan ensured substantial capital and annual cost savings.

Solar Photovoltaics Assessment, El Paseo Center South Gate, South Gate, CA. Renewable Energy Modeler to justify implementing solar PV systems on the existing buildings and site at El Paseo South Gate Shopping Center. Iterations of calculations quantified initial capital costs, electricity savings, and a simple payback for various PV system arrangements on site. An optimization tool was used to determine a best-fit solar PV system.

Sustainability Action Plan, Los Angeles World Airports, Los Angeles, CA. Energy Analyst who supported LAWA's vision to become more sustainable for the environment, visitors, and airport operations at Los Angeles International Airport and Van Nyus Airport. The sustainability action plan highlighted the airports' current sustainability posture, then identified potential improvements and offered implementation strategies. Core strategies of this project included utility monitoring and controls, utility conservation, and onsite energy production while maintaining stable airport operations.

Decarbonization Study, University of California, Riverside, Riverside, CA. Technical Planner strategizing how the University of California, Riverside (UCR) achieves a 90% or greater reduction in Scope 1 emissions by 2040. Decarbonization Study includes suggesting how the campus transitions from large fossil fuel uses to electrified options to reduce emissions, especially with its centralized steam utility plant operating from natural gas. Other strategies entail addressing outlying decentralized HVAC systems and providing solutions for emissions reduction. High level estimates of total capital and operational costs and savings are provided to address the financial feasibility of implementation, and altogether, the Study illustrates glidepaths of necessary actions to take and when.

Port of Seattle, Central Mechanical Plant Decarbonization and Resilience Study, Seattle, WA. Technical Manager responsible for orchestrating the development of a plan to upgrade the existing heating and cooling systems of the central mechanical plant at Seattle-Tacoma International Airport to achieve net-zero carbon by 2040. The plan also included an all-hazards mitigation plan that incorporates solutions to lessen effects of natural and human-caused disasters, such as effects from climate change like extreme heat and drought.

Energy Master Plan, University of Colorado, Boulder, Boulder, CO. Energy Modeler and Researcher who modeled energy consumption and determined energy use intensity (EUI) baselines for an educational campus using Rosetta—a 2018 AECOM Global Challenge Winner energy modeling platform—and researched effective strategies of centralizing and electrifying energy for the campus with regards to local climate. The University of Colorado Boulder engaged AECOM to develop an Energy Master Plan for its campus. The plan intends to evaluate strategies and create a phasing plan that will enable the university to meet its current and future energy needs, achieve its greenhouse gas emissions goals, and enhance its resilience posture.

Energy System Feasibility Study, Inglewood Basketball and Entertainment Center, LA Clippers, Inglewood, CA. Energy Systems Analyst for new construction of a performance arena. Combinations of chillers, thermal energy storage, fuel cells, photovoltaics, and battery energy storage were evaluated for energy production and annual cost savings to address electricity and cooling demand efficiently. Feasibility for natural ventilation was also analyzed while upholding the unique, aesthetic façade features.

AECOM

Edgar Zavala

MICROGRID FEASIBILITY LEAD

Education
BS of Engineering Mechanical & Electrical, Universidad Autónoma de Nuevo León (UANL)

Registrations/Certifications
IEEE Accredited Professional

Edgar is the Microgrid Solution Architect for the smart energy practice at AECOM and focuses on energy, sustainability, and resilient Microgrid infrastructure. He has over14 years of experience managing complex projects for power systems.

Edgar has managed projects for heavy industries leading teams for the design, test and commission of power control systems, electrical substation operations, microgrid systems, control algorithms and automate industrial process in Middle East, Central Asia, Australia, North & South America, Europe, Africa. for Oil & Gas, wind farm, solar farm, Microgrid, industrial factories, city utilities, oil rigs, etc. fostering a positive, efficient work environment and motivating team members to exceed expectations

Project experience

Salt Lake City Department of Public Utilities, UT. Review the recent updates to the protection scheme for an electrical substation, stepping down from 138kV to 13.8kV, with a 12 MVA main feeder.

San Fransisco Public Utilities Company, CA. Design and conduct a comprehensive review of various sections within the protection scheme for the electrical substation PC&M. This includes developing precise relay settings and preparing a detailed wiring schedule.

BTM Air-Train Switchgear Renewable Energy Control CA. Develop the protection scheme for the relays controlling power flow between the renewable energy stations and the utility's main point of interconnection, including the creation of the SCADA point list and communication paths.

City of San Jose, CA. Developed a comprehensive microgrid feasibility study, including BESS (Battery Energy Storage System) sizing, load profiling, utility interconnection evaluation, and detailed energy analysis.

City of Santa Clara, Santa Clara CA. Developed a microgrid project centered around a fire station building complex. The project includes a solar system and a Battery Energy Storage System (BESS), designed to operate parallel to a diesel generator system. This setup ensures autonomy during blackouts and contributes to reducing the utility's energy consumption. My role in this project involved developing the control and communication systems, which manage power generation and utility consumption under both islanded and non-islanded conditions.

City Of Santa Rosa, Santa Rosa CA. Executed a microgrid project for a group of complex buildings with available space for solar PV systems to generate renewable energy. The project's objective was to support the city's efforts in reducing its environmental impact and lowering energy costs. My role focused on conducting a feasibility study, analyzing both the technical and financial challenges the project might face.

Tennessee Valley Authority, TN. As the leader in system controls design for utility-grade solar farm initiatives, I am responsible for the phased design of control systems at 30%, 60%, and 90% completion stages. This includes the development of network configurations, cable pathways, interfaces, and services. The core objectives of this project involve controlling and monitoring solar panels and TESLA batteries to efficiently channel power into the utility grid.

NREL. This project involved creating a software for NREL to monitor real-time data and simulate various power conditions. My responsibility was to develop an algorithm capable of predicting the optimal power paths, based on the vertices and nodes connected to the loads and power sources.

Toronto Island Water Treatment Plant, Canada. Led the system controls for the microgrid control system efforts. Design of the sequence of operation and upgrade of the existing system controls. The objectives for the project are resiliency, and reduction of power consumption (called: Global adjustment Charges in Canada) through BESS and PV Solar System.

Veolia Rialto Wastewater Treatment Plant, CA. Led the system controls for the microgrid and BESS efforts. Analysis of vendor proposals. Specifications for BESS, diesel generator and Microgrid controls. Design the 90% of controls schematics and communications. Integration of the sequence of operations for the microgrid controller.

Community Microgrid, CA. Leading the communication and controls for the microgrid system. The project prospect to have a demand of 40 MW with a network of BESS and Solar PV system distributed in different buildings. The main goals for this project are: Reduce footprint, Resiliency, maximize energy consumption and production.

Brookfield PV Solar, OR. Edgar led the project analysis for five prospective PV solar sites, reviewing the Interconnection agreement, analysis of the proposed electrical engineering and proposed equipment.

Tatum Lau, AICP, ENV SP

COMMUNITY RESILIENCE

Education
MS, Urban Design, University of Texas at Austin.

MS, Community and Regional Planning, University of Texas at Austin.

MA, Architecture of Rapid Change & Scarce Resources, London Metropolitan University.

BAS, Architectural Studies, University of Witwatersrand.

Registrations/Certifications
American Institute of Certified Planners (AICP)

Envision Sustainability Professional (ENV SP)

Professional Affiliations
American Planning Association

Tatum is a Senior Associate with AECOM's Urbanism + Planning practice. She is an experienced facilitator, bringing diverse interests together to co-create solutions that are ecologically sensitive, encourage economic prosperity and are equitable for communities. She has supported public and private sector clients evaluate and develop policy, infrastructure and places that lead to equitable outcomes. She has worked with state, regional, and city governments, as well as non-profits and the development community across climate action, resilience, transportation and land use planning. As the Social Value and Equity lead in the U.S. West and an ED&I leader at AECOM, she centers equity in projects, in the workplace and her community.

Project experience

Project Title in bold always followed by a period. Empor si conse voluptur, sunt imperci liquidu citiost vendae. Onseque minto essinti dunt. Tae nis re pratur, quassunt ex eariae voluptia qui nonserum aut offic tem il il enesenimenia qui disquib usaped ut fugit por am, quo te porest qui illaut andic tes sum eumquassi aut haruptu reperibusam quas pratqui opta quiae porerit, vendel eseque estenihitium la volutasperit et, ius et ut volupti re conecea sit est, cum voluptis id quis evelenda dolupienis endiorem iumendae.

Regional Resilience Framework, Southern California Association of Governments (SCAG), Southern California, CA. Social Resilience Lead. The AECOM team aimed to integrate climate and broader resilience thinking that is grounded in both local community and jurisdiction knowledge into the next Regional Transportation Plan/Sustainable Communities Strategy, and further develop Resilience Planning materials. The Regional Resilience Framework (RRF) is intended to guide the exploration of emerging and potential disruptions from public health, human-caused and natural hazards. The team is developing a toolkit to guide local decision-making and enable local jurisdictions to better plan for resilience.

Lower Rio Grande Valley (LRGV) Economic Development Strategy and Diversification Study, Texas General Land Office (GLO), Lower Rio Grande Valley Region, TX. Community Resilience Lead. AECOM is supporting the GLO to develop strategies that aim to strengthen regional resilience, primarily through economic diversification for three counties in the Lower Rio Grande Valley region (Hidalgo, Willacy, and Cameron). This study identifies existing economic and community assets including workforce, education, housing, transportation, and tourism among others – and ultimately will identify priority actions to help regional stakeholders prepare for and recover from major disruptions such as frequent flooding and COVID19. The study includes extensive stakeholder engagement leveraging interviews and focus groups to guide the plan's vision, objectives and actions.

Economic Resilience & Diversification Study, Texas General Land Office (GLO), Nine-County Regions, TX. Community Resilience Lead. An economic resilience strategy for a nine-county study area anchored by Corpus Christi, along the Gulf Coast of Texas. The need for the study was driven by accelerating impacts from major storms, specifically Hurricane Harvey in 2018. The analysis is focused on how strategies for economic diversification can be leveraged to also respond to broader resilience challenges currently facing this region. The study identified an inventory of regional strengths and weaknesses, strategies for improving resilience to hurricanes, storm events and economic downturns and an action plan for implementing these. Tatum supported the Texas GLO to complete an economic resilience strategy.

Campus Decarbonization Plan. University of California Riverside. Riverside, CA. Equity and Engagement Lead. The University of California (UC) adopted new, stronger climate action goals that prioritize direct emission reductions, limit the use of carbon offsets and align UC's climate goals with those of the state of California. AECOM is conducting a comprehensive study of campus decarbonization for UC Riverside (UCR), culminating in strategic plan for reducing or eliminating campus Scope 1 greenhouse gas emissions in accordance with UC system requirements. The study also includes identification of climate justice and equity considerations related to campus decarbonization, such as assessments related to labor vulnerability and community impacts; analyses needed to conduct future climate action planning; and opportunities for collaborative involvement of students, faculty, and staff in planning and implementation of decarbonization strategies.

AECOM

Emily Schwimmer, AICP, ENV SP

FUNDING AND FINANCING

Education
MSc, Urbanization & Development, The London School of Economics

Master of Urban Planning, Graduate School of Design, Harvard University

BA, Global Studies & Geography, University of California, Los Angeles

Registrations/Certifications
American Institute of Certified Planners

Envision Sustainability Professional (ENV SP)

Professional Affiliations
American Planning Association

Urban Land Institute

Emily Schwimmer is an urban planner and economist with over ten years' experience working with public agencies, non-profits, and private sector organizations to fund, finance, and implement programs and capital improvement projects that aim to protect the environment, address socio-economic inequities, and improve the resiliency of communities. These projects range from rail electrification to bike lanes to green infrastructure and environmental restoration projects. As a member of AECOM's Climate Advisory Services team, she has experience with economic, fiscal impact, and cost-effectiveness analyses; funding, financing and governance, strategies; resiliency planning; demographic and market research; and community engagement.

Project experience

CleanPowerSF Net Billing Tariff (NBT) Analysis, San Francisco Public Utilities Commission (SFPUC), San Francisco, CA. Project Manager. CleanPowerSF aims to develop a tool to determine the feasibility of creating an NBT-like tariff and to determine the appropriate levels for key components, especially the energy export credits. The tool will compare the impacts of various NBT rate options on CleanPowerSF customer groups by rate class, CARE/FERA customers, and other categories.

Glen Canyon Dam Long-Term Experimental Monitoring Program – Economic Impact Analysis, Western Area Power Administration, Colorado. Senior Associate AECOM assessed the financial impact of reduced power generated by the Glen Canyon Dam on WAPA's revenues and customers. We supported evaluation of four alternatives of proposed operational changes to flows out of Glen Canyon Dam and analyzing how the alternatives will adversely impact hydropower generation at the GCD.

Residential Building Decarbonization Implementation Plan, Washington State Department of Commerce, Washington State. Senior Associate. AECOM worked with Washington to develop an implementation plan for reaching its residential buildings emissions reduction targets. Emily led the landscape analysis detailing the suite of current residential building decarbonization programs and policies across local, state, and federal levels, and conducted a subsequent gap analysis highlighting barriers and challenges, drawing heavily on interviews with stakeholders. Based on these findings, the team developed policy recommendations for a statewide residential decarbonization program. The final implementation plan established specific actions and timelines aligned with the three phases laid out in Operation 2030; establishes clear energy utilization targets and GHG emissions limits for buildings by type; determines roles and responsibilities for the client, state agencies, and other external stakeholders; and identifies the resources required to achieve the State's goals.

San Jose Residential Building Decarbonization Analysis, City of San José, CA. Project Manager. AECOM modeled the cost of various residential building decarbonization measures and researched available consumer-facing incentives offered by federal, state, and local governments. This analysis allowed AECOM to estimate the approximate gap in available funding for decarbonizing residences in San José. In a subsequent task, AECOM conducted an analysis of revenue-generation potential of gross receipts tax to fund a citywide program to support building electrification to single-family and multi-family homeowners in the City of San José and developed recommendations for how these findings may inform policy decisions.

Systems Mapping to Support the Regional Multi-Hazard Adaptation Plan and Technical Assistance Program, Bay Area Regional Collaborative (BARC), San Francisco Bay Area, CA. Project Manager. AECOM worked with BARC to develop a regional multi-hazard adaptation plan and technical assistance program for the San Francisco Bay Area. Using best practices in systems thinking, this project developed system maps illustrating how regional agencies currently address climate adaptation through their enabling legislation, roles, authorities, policies, practices, and available resources. Tasks included a landscape analysis to develop a framework of climate resilience roles and responsibilities by state, federal, and regional agencies in the Bay; stakeholder engagement; and regional agency research and interviews to map their policies, authorities, technical assistance programs, and available levers. The outcomes illustrate gaps between regional adaptation needs and existing programs and agency activities, and recommend next steps to address these gaps.

Salim Moslehi, PhD, CEM

MICROGRID MODELING

Education
Ph.D., Civil, Environmental and Sustainable Engineering, Arizona State University, Tempe, Arizona

MSc., Mechanical Engineering, Tarbiat Modares University, Tehran, Iran

BSc, Mechanical Engineering, Iran University of Science and Technology, Tehran, Iran

Dr. Salim Moslehi is a Senior Energy Planner focusing on decarbonization of energy systems, integration of renewable and sustainable energy technologies, and developing resilience enhancement planning. Salim has demonstrated history of working in industry, R&D, and academia. He specializes in developing energy master plans for cities, campuses, and communities to achieve their sustainability, decarbonization, and resilience goals where he applied his strong background in renewable energy technologies, distributed energy resources, heating-cooling systems, and simulation and modeling techniques. Over the past 8 years, he has been involved in several projects related to emerging energy technologies, integrated energy systems, and resilient energy infrastructure. Salim has more than 7 years of experience in various industries as designer and technical project manager/coordinator in microgrid design and optimization, solar photovoltaics design, district heating and cooling systems decarbonization, and energy infrastructures resilience enhancement planning.

Project experience

Western Riverside County of Governments, Energy Resilience Plan, Riverside, CA. Microgrid Modeling. AECOM is assisting the Western Riverside Council of Governments (WRCOG) with the development of an energy resiliency plan to support their members in response to power interruptions resulting from events such as wildfires, extreme heat, or Public Safety Power Shutoffs (PSPS). The Project will provide a framework that will enable WRCOG and its member jurisdictions to identify and prioritize a combination of facility, community, and infrastructure investments such as local generation, microgrids, and energy storage systems to improve regional resilience. In this effort, Salim is providing technical support on microgrid simulations for the case studies.

San Diego International Airport (SAN), Central Utility Plant Electrification, San Diego, CA. Energy Technical Analyst. Salim is providing technical support in the development of technical solutions and pathways to electrify the SAN central utility plant enabling the Sand Diego County Regional Airport Authority to progress towards its carbon neutrality goals set in the Strategic Energy Plan (STEP) and Carbon Neutrality Plan (CNP). The STEP provides a framework for developing energy-efficient and carbon-neutral airport facilities. It establishes long-term goals and strategies for best utilizing energy and conservation practices while aligning with the Airport Development Plan and Capital Improvement Plan's vision. These goals will ultimately allow the airport to establish more dependable energy sources while offsetting GHG emissions. The STEP addresses key issues of energy efficiency and conservation; on-site energy generation and storage; enhanced monitoring of key energy metrics; and mechanisms through which to actively engage the broad spectrum of airport stakeholders.

Campus Data Mapping, National Research Lab [Confidential]. Energy Analyst. Salim provides technical support for a multi-phase effort to develop "digital twins" of utility infrastructure for two research campuses. The effort digitizes static asset and infrastructure data into common, interoperable schema. A key part of this effort is the development of a dynamic analysis dashboard to facilitate planning-level decision-making in charting a path towards net zero carbon campuses.

U.S. Air Force, Installation Energy Plans – Pilot, 7 Locations across the U.S. Technical Support. Salim is serving as technical support on the successful execution of a multi-year program to deliver IEPs for USAF and Air National Guard (ANG) installations. Salim has supported the delivery of 6 USAF and ANG installations to-date located across the US and in global locations. Resilience considerations include natural hazards such as coastal flooding, wildfires, hurricanes, earthquakes, and ice storms; identification of redundant power, heating, cooling, and water requirements, and maintenance considerations such as personnel or equipment availability to ensure rapid response time.

Greater Toronto Airports Authority, Environmental Master Plan, Toronto, ON. Energy Technical Analyst. Salim is providing technical support in the development of the energy component of the greenhouse gas reduction program through electrification of the central utility plant. The Greater Toronto Airports Authority (GTAA) has an ambitious program to reduce energy consumption and greenhouse gas emissions by planning, designing, and delivering an optimized and comprehensive approach aimed at achieving the GTAA's facility decarbonization goals across three areas – lighting systems, clean heat energy services at its central utility plant, and deployment of on-site solar photovoltaic and electric vehicle charging at Toronto Pearson International Airport. Salim's work has been focused on identifying and developing strategic and technical planning toward more efficient and more robust heating and cooling systems.

AECOM

Chris Hyun, AIA, NCARB, LEED AP BD+C, WELL AP, Assoc. DBIA

ASSET ADVISORY

Education
MArch, Yale University

BArch, University of Southern California

Registrations/Certifications
License Architect, California Architects Board, #C38151

NCARB Certified, National Council of Architectural Registration Boards, #98401

LEED AP Building Design + Construction, U.S. Green Building Council & Green Business Certification, Inc., #11213225

WELL AP, International WELL Building Institute & Green Business Certification, Inc., #WELL-AP-0000157708

Licensed Real Estate Agent, California Department of Real Estate, #02156297

Associate DBIA, Design-Build Institute of America, #AS-4044

Chris Hyun, a senior architecture designer of the Los Angeles Office of AECOM, has over 10 years of experience with projects ranging from skyscrapers to small-scale residential projects. He has experience in all project phases and various project types, including workspace, higher education, courthouse, healthcare, mixed-use high-rise residential, design-build competitions, high-level scenario planning and feasibility studies for public clients, etc. Chris has extensive experience in consultant collaboration using Building Information Modeling software, as well as the production of presentation drawings, renderings, architectural drawings documentation, and construction administration. Many projects he has worked on have won numerous design awards and are widely published. He serves as an examination subcommittee member for the National Council of Architectural Registration Boards (NCARB), where he writes and edits new items for the national Architectural Registration Exam (ARE).

Project experience

Deferred Maintenance Program Management 2012-2022 - Phase 3, Los Angeles County - Chief Executive Office, Los Angeles, CA. Architect Consultant. AECOM is conducting facilities condition assessments and providing capital planning for the County of Los Angeles at over 24-million-square-feet in more than 1,149 county-owned and operated facilities. The assessments are used to identify deficiencies and developing maintenance, rehabilitation, repair and capital replacement projects**.**

General Hospital Move Management Strategy Study, Los Angeles County, Los Angeles, CA. Senior Architecture Designer. AECOM Strategy+ and Building and Places teams collaborated with the County to develop multiple move strategies to evacuate General Hospital and West Campus prior to the start of redevelopment activities. The study involved evaluating the site, analyzing space requirements, devising a move strategy, and creating a cost estimate and schedule analysis to support the recommended move strategy.

Koreatown Gateway, LANI, Los Angeles, CA.* Project Designer. A winning entry for the Koreatown Gateway competition in Los Angeles. The project design consisted of two L-shaped posts with embedded lettering connected with a web of programmable LEDs. As a project designer, produced architectural graphics content for client presentations. Worked on architectural documentation drawings using BIM.

Buena Vista Horace Mann K-8 School Modernization Construction Management, San Francisco Unified School District, San Francisco, CA. Peer Review Architect. AECOM is providing construction document phase design management and construction management services for the modernization of the 100-year old Buena Vista Horace Mann K-8 School, a dual-language Spanish Immersion Community School in the heart of the Mission District of San Francisco, California. The project is being funded under the 2016 Bond Program.

USC Campus Health Facility PM/CM Services, University of Southern California, Los Angeles, CA. Peer Review Architect. AECOM is providing project management/construction management for the USC Campus Health Facility under a traditional delivery with a GMP negotiated construction contract. As a peer reviewer, performed constructability review on the construction document drawings produced by the project's design team and facilitated design, bidding, and schedules of specific building systems. Anticipated construction budget of $428M.

Providence Tarzana Medical Center, Providence, Tarzana, CA.* Project Designer/Architect. As a part of a master plan, the project includes a new, state-of-the-art patient care wing featuring all private rooms and a new emergency department. As one of the key team members, regularly attended the OAC meetings and closely coordinated with structural, MEP, civil, medical equipment, and landscape consultants to respond to the RFIs/Submittals and produce architectural drawing sets. Also acted as an internal BIM lead.

JCC LAC Master Plan Study, JCC, Los Angeles, CA. Senior Architecture Designer. AECOM is providing criteria architect services for development of a long-range strategic plan for improving and modernizing superior court facilities of Los Angeles County.

** Experience prior to AECOM*

Sandy Mukherjee, LEED AP BD+C, ENV SP

IMPLEMENTATION FRAMEWORK

Education
Master of Building Science, Architecture, University of Southern California - Los Angeles

Bachelor of Architecture, Architecture, Jadavpur University, India

Registrations/Certifications
LEED Accredited Professional (AP) BD+C

Envision Sustainability Professional (ENV SP)

Sandy Mukherjee leads the Sustainability practice for Enterprise Capabilities. She has an international background in Architecture and is responsible for providing sustainable solutions for infrastructure projects as well as high performance buildings. Sandy has strong experience working with various municipal, government and state level agencies as well as utility companies. With over 9 years of experience as an Envision Consultant (ENV-SP) for infrastructure projects and LEED Consultant for buildings, she has leveraged her knowledge in sustainability across a multitude of projects with demonstrable experience in guiding design teams through the full certification process. Her skills in coordinating with multiple disciplines and consultants to integrate sustainability measures in the design and construction stages of a project, combined with her technical knowledge, means she is perfectly placed to provide leadership and oversight to ensure the project meets its sustainability targets.

Project experience

WRCOG Energy Resilience Plan, Western Riverside Council of Governments, CA. Technical excellence lead on the development of a blueprint for energy resiliency technologies, projects, and applications for WRCOG member jurisdictions. The Plan identifies critical infrastructure and loads in each member jurisdiction and identifies projects and strategies to maintain power supply during power interruptions.

Sustainable Infrastructure Guidelines, Los Angeles County Department of Public Works, CA. Sustainability specialist working with the County staff to develop infrastructure guidelines (SIG) for the County of Los Angeles. The guidelines apply Envision, LEED and custom guidelines to all of Los Angeles Public Work projects. The guidelines provide the County with specific strategies and action items for topics including Transportation, Climate Change, Resilience, Integrative Design, Site, Water, Energy, Materials, Construction and Operations and Maintenance. An interactive implementation and tracking tool to support the guidelines was also developed and a training program was deployed to train all design division staff on the customized SIG tool.

U.S. Air Force Base Installation Energy Plan, U.S. Airforce. Project Coordinator and Technical Reviewer, providing framework for resiliency requirements across multiple air force base campuses, as a pilot project that will inform other bases on how to improve their robustness, redundancy, resourcefulness, response and recovery. This involved site visits to individual bases, multiple workshops with different mission set owners and ultimately forming an action plan based on the COA (Course of Action) workshops.

SDG&E Net Zero Strategy, San Diego Gas and Electric, CA. Technical excellence lead on the development of a comprehensive, portfolio-wide strategy that summarizes SDG&E's current facility operations and performance, articulates its goals and targets, quantifies energy, water, and waste strategies, describes regulatory and financial mechanisms for implementation and develops a prioritized roadmap for implementation. The effort involved ASHRAE Level 2 assessments to quantify existing performance and identify energy and water opportunities for improvement.

Sustainability Action Plan Update, Town of Breckenridge, CO. Technical lead responsible for reviewing current sustainability plan for the Town of Breckenridge and providing updated goals, targets and strategies that align with the ski town's vision for sustainability. The key focus areas included energy, water, material management, mobility and climate action. This also involved reviewing concurrent efforts within the community that relate to open space, wildlife, food system, child care and housing and consolidating the sustainability narrative, as well as designing a public facing website to showcase the Town's commitments and progress towards meeting their sustainability targets.

University of Colorado, Boulder, Energy Master Plan, CO. Technical excellence lead on the development of an energy master plan for CU Boulder. The plan lays out the strategic vision for the University's energy infrastructure and operations for the next 20 years in support of emission-reduction and resilience goals. The plan defines these goals and identify strategic, prioritized strategies to achieve them. The strategies include energy efficiency planning, conservation measures, continuous facility optimization, operations improvements, occupant engagement, and renewable energy.

Detroit Green Building Standards, City of Detroit, MI. Sustainability consultant, responsible for developing an initial draft for the City of Detroit to consider and implement a Green Building Standards program within the city, considering its historical context and current policies that are in place.

AECOM

Chris Houck

SOLAR SME

Education
Sustainability, Energy Concentration, University of Vermont

Minor in green building & community design.

Registrations/Certifications
OSHA 30 Hour

Advanced Solar PV 40 Hour

Chris Houck is an innovative and knowledgeable project designer with 10+ years of experience in the energy field working on commercial, industrial PV, and battery energy storage systems as well as Electric Vehicle charging stations (EV). He brings a strong background in low and medium voltage grid systems.

Chris has also served as a portfolio manager for large name brand companies, delegating designs, equipment procurement, project timelines, and multi-department iterations to complete projects. Mr. Houck is an innovative and knowledgeable project designer with 10+ years of experience in the energy field working on commercial, industrial PV, and battery energy storage systems as well as Electric Vehicle charging stations (EV). He brings a strong background in low and medium voltage grid systems.

Chris has also served as a portfolio manager for large name brand companies, delegating designs, equipment procurement, project timelines, and multi-department iterations to complete projects.

Project experience

HEB, Texas, United States*. Responsible for 40+ MW of roof projects. Oversaw program for 5 years.

Home Depot, East Coast, United States*. Responsible for 5MW of projects. Oversaw Program for 2 years.

Whole Foods, East Coast, United States. Responsible for 1.5 MW of projects. Oversaw program for 1 year.

TVA, Paducah Solar & BESS Project, Paducah, KY. Project Design Lead of all teams for the 90% detailed design of a 114MW DC / 95MW AC PV system and a 100MW/400MWh BESS system, including MV Collection and SCADA systems, interconnecting directly at the TVA Shawnee Fossil Plant.

Vieques Island, Puerto Rico, Confidential Client*. Lead Designer for conceptual Microgrid drawings of a 20MW DC PV and 12MWh Battery Energy Storage system, including a 15kV E-house substation.

Confidential Client, Lanai, HI*. Lead Designer for conceptual Microgrid drawings of a 10MW DC PV array and 9MWh Battery Energy Storage System. Including plans to interconnect directly at the utility substation.

Confidential Client, Molokai, HI. Lead Designer for conceptual Microgrid drawings of a 2MW DC PV array and 800kWh Battery Energy Storage System to interconnect ahead of client loads and net meter to client while supplying utility directly.

TVA Shawnee Plant Solar & BESS Project, Paducah, KY. Lead of a 100MW landfill PV system and 100MW/ 400MWh BESS system, including MV collection and SCADA systems.

Ulster County Landfill PV Array, Kingston, NY*. Lead Designer, for late stage redesign of the permit and construction drawings package for a 1.9MW DC ground mount PV system, Oversaw project design changes and RFI's until projects PTO.

Montgomery County - Oaks Landfill PV Initiative, Gaithersburg, MD*. Took over as lead designer for a preliminary and permit drawings set of a 5.8MW DC PV Ground mounted array on the closed county landfill. Preliminary drawings moved into Permit drawings and then were sold to EPC at 60% level design for further development.

Baltimore County Brownfield PV Array, Baltimore, MD*. Assistant Designer of the preliminary drawings of a 12MW DC PV array to go on Baltimore county's Southwest area park, Brownfield.

County of Dutchess PV System, Dutchess, NY*. Lead designer on a 2.498MWDC PV array interconnected at 34.5KV. Designed the array with 4 different orientations to accommodate for landscape challenges, such as, protected wetlands and shallow bedrock. Performed glare study due to PV array's proximity to the Hudson Valley Regional Airport.

TESLA Fremont Factory PV Project. Fremont, CA*. Lead designer of a 500kW roof mounted PV array on top of the Tesla Automotive manufacturing plant. Created permit and construction drawing package. Oversaw project progress to PTO. Site walked entire factory to identify an acceptable point of interconnection that would not interfere with ongoing manufacturing load demands as well as identify a roof that would not require major upgrades or reinforcements to install the array.

** Experience prior to AECOM*

AECOM

Rachel Dec

FUNDING AND FINANCING SME

Education
MPP, The Harris School of Public Policy at the University of Chicago

BA, Political Science, Northeastern University

Rachel is an analyst with AECOM's Economics + Advisory and Sustainable Economics practice, building upon years conducting nonprofit, public, and academic research on effective public policy. Before joining AECOM, she focused on data-driven urban policy analysis, particularly on matters involving housing and transportation, for two nonpartisan nonprofit research groups. Her projects at AECOM focus on designing efficient policies and places that address the needs of their markets and communities. The scope of her work includes statistical data analysis and visualization, designing and executing qualitative campaigns, and market and demographic analysis.

Project experience

Economic Impact Analysis, Confidential Autonomous Vehicle (AV) Client, San Francisco, CA. Analyst. In partnership with an autonomous vehicle service provider, AECOM is assessing the economic impacts of their current operations within its current service area, in addition to potential expansion into other geographies. Rachel is developing an economic impact methodology and conducting the overall assessment of current and future services.

EPA Community Change Grant Support, City of Austin. Analyst. Provided grant-writing support to two Austin-based nonprofit organizations as they each pursued a federal EPA grant for climate resilience and workforce development projects in their communities.

State Resiliency Plan, Texas Department of Transportation (TxDOT), Austin, TX. Analyst. AECOM is supporting TxDOT in evaluating physical and technological infrastructure necessary for the operation of a resilient statewide multimodal transportation system including highways, bridges, railways, airports, maritime ports and waterways, bicycle and pedestrian facilities, transit, international border crossings, and intelligent transportation systems. Rachel is developing a funding and financing plan to help TxDOT plan for and implement projects and programs related to prioritized adaptation strategies; this includes the compilation of funding opportunities (i.e., grant programs), financing tools, and revenue generation tools.

Typhoon Mawar Recovery Efforts, Guam. Task Order Lead. Following Typhoon Mawar in 2023, AECOM is partnering with a federal agency to assess damages associated with buildings and structures throughout the island the of Guam. Rachel led the development of numerous economic analyses that identify architectural, structural, electrical, and mechanical deficiencies and make recommendations for appropriate repairs to maintain operations .

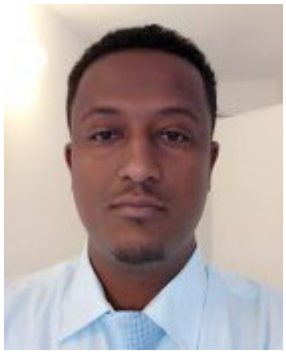
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Support, Confidential Client., U.S., Analyst. Supported development of a multi-million dollar RAISE grant. Rachel wrote sections related to Sustainability and Resilience.

EPA Grant Application Support, Climate Pollution Reduction Implementation Grant, Port Authority of New York and New Jersey, NY and NJ. Analyst. Supported development of multi-million dollar federal infrastructure grant. Assisted in drafting language and ensuring compliance to EPA's objectives for the grant program.

Ohio State Airport System Plan (OASP) Update, Ohio Department of Transportation, Statewide, OH. Analyst. AECOM is providing services to update Ohio's statewide aviation plan. This includes developing an eComponent that supports public involvement through direct survey input, data gathering efforts, data analysis, and reporting by leverage existing data storage and analysis and presentation technology into an adaptable user ready presentation platform for all aspects of the SASP update. Report organizes research findings for economic trends across Ohio planning regions, particularly focusing on aviation industry and its connections to the state economy.

Sustainability and Environmental Program Support, Department of Homeland Security (DHS), U.S., Analyst. Supported the Office of the Chief Readiness Support Officer Sustainability and Environmental Programs (SEP) to develop both compliance documents and strategy relating to operations and federal requirements.

AECOM



Abinet Eseye, PhD

MICROGRID SME

Education
PhD, Electrical Power System Engineering & Automation, North China Electric Power University

M.Sc., Electrical Power Systems Engineering, Bahir Dar University

B.Sc., Electrical Engineering, Hawassa University

Dr. Abinet Eseye is a Microgrid Power Systems Lead Engineer within the Energy Services at AECOM and focuses on design/planning, modeling/analysis, control, and protection of microgrids (hybrid energy systems). He has over 14 years of R&D and engineering experience on microgrids, distributed generation and storage, renewable energy, and electric power system.

Abinet has delivered feasibility study, design and owner's engineering services for several microgrid, energy storage and renewable energy projects. He is a subject matter expert (SME) for microgrid and BESS project developments and detail designs. He prepares electrical portion of multi-discipline engineering services proposals.

He has developed several computational algorithms and tools, especially related to advanced optimization, scientific machine learning, protection schemes, and resilience strategies, to advance electric power systems and renewable energy applications. He has published over 30 scientific papers, granted/filed 7 invention patents, and released 3 open-source software records.

Project experience

Stanley Rialto Wastewater Treatment Plant, CA. Performed techno-economic modeling and analysis of distributed energy resources (DERs) including PV and BESS to validate the feasibility of a microgrid-based power supply for the plant.

Veolia Rialto Wastewater Treatment Plant, CA. Conducted power system studies for a microgrid-based power supply (PV + BESS + CHP + Diesel) for the plant. Also, developed microgrid control strategies and sequence of operation, and evaluated several equipment specifications and suppliers for the project.

High-tech Client Community Microgrid, CA. Technical lead (SME) for the microgrid and BESS scope. Performed techno-economic analysis, produced microgrid conceptual designs and calculated BESS sizes for a high-tech community (residential and non-residential) development with a total demand of 40MW via inter-connected PV plus BESS microgrids distributed across several buildings.

Toronto Island Water Treatment Plant, Canada. Technical lead (SME) for the microgrid and BESS scope of a microgrid targeted demand charge reduction (called global adjustment in Canada) and maximized resiliency for a water treatment facility via a PV plus BESS microgrid.

Blackwell Zink Company (BZC), OK. Renewable Energy Option Assessment Project. Led the renewable deployment option feasibility study aimed to reduce greenhouse gas (GHG) emissions by at least 50% through installation of renewable sources such solar PV and BESS and decommissioning existing diesel generators.

North Kegley, IL. Alternative Energy Evaluation Feasibility/ Concept Study Project. Technical lead for the project. Performed/led the feasibility study for renewable energy deployment to meet sustainability goals. Developed and delivered the feasibility report.

City of Burbank, CA. Developed an EPC RFP for design/ engineering, procurement, and construction of a PV plus BESS grid-connected energy system.

Greater Toronto Airports Authority (GTAA), ON, Canada. CoGen Decarbonization Feasibility Study Project. BESS SME for the project. Performed and led concept study for battery energy storage system deployment to meet sustainability and resiliency goals.

Keller North America, VA, NC & FL. Feasibility Study for Renewable Energy Deployments in Multiple Industrial Sites. Identified and compared utility net metering and wholesale market participation options to support the feasibility study to meet sustainability goal.

Brigham Young University-Hawaii (BYU-Hawaii), HI. Microgrid and BESS SME for the project. Reviewed microgrid sequence of operation developed by a third-partly (Siemens). Conducted load and generation balance assessment. Performed power system studies including load flow, short circuit, arc flash, harmonic analysis, relay protection coordination, and power quality assessment. Produced and delivered load-generation balance assessment report and power system studies report.

Karl Metz, RA, LEED AP, IAM

ASSET ADVISORY SME

Education
Master of Architecture (MArch), Ohio State University

Bachelor of Arts (BA), Economics, Union College

Registrations/Certifications
Registered Architect- California

LEED Accredited Professional

IAM Certificate

Karl Metz is the AAS West Practice Lead and a senior project manager with 20 years of experience in the planning, design, and construction fields. Karl has worked on various building types including Stadiums, Corporate-Commercial, Healthcare, Industrial, Justice, and Sports/Recreation. With diverse project experience providing a solid foundation, Karl can anticipate unique field conditions and develop procedures for accurately managing large and complicated scopes.

Project experience

County of Los Angeles Deferred Maintenance Program Phase 3. Program Manager, Technical Lead- AECOM was selected in 2010 to perform the County-wide Deferred Maintenance Program Services, and has successfully completed facility condition assessments, developed costed implementation projects and barcoded equipment for more than 50 million square feet of County-owned properties in over 3,500 buildings across 24 separate departments. The project included the assessment of County-owned venues such as the Hollywood Bowl, countywide recreation facilities, parking structures and surface parking lots.

County of Santa Clara- Continuity of Operations Study. Program Manager- System Reliability Assessments for healthcare facilities, focused on redundancy and reliability in utility infrastructure and power systems. Configured custom data collection and reporting. Reports will highlight potential points of failure in assessed infrastructure and systems, prioritize assessed systems for repair and retrofit based on criticality, and provide possible resiliency and redundancy solutions.

Shell Global Building Safety Standards Assessments. Program Manager- AECOM is currently performing health and safety code compliance assessments for Shell in their global office portfolio. This project will assist Shell in prioritizing actions for achieving a safe working environment for their office staff worldwide.

Kellogg's Global Headquarters Study. Technical Lead- Using our digital assessment tools, AECOM performed facility assessments across Kellogg's Battle Creek HQ campus establishing the current condition, estimating the costs required to address deferred maintenance needs, and developed capital plans for Kellogg's to prioritize needed replacements/improvements.

Africa Basketball League. Project Manager, Technical Lead- AECOM was selected by the National Basketball Association (NBA) to assist with the launch of their Africa Basketball League (BAL). The scope for this project included assessing venues in Egypt, Tunisia, Morocco, Nigeria for use by the League. As project manager, Mr. Metz coordinated the logistically complicated trip and lead multidisciplinary team in the field. The goal for this project was to evaluate each potential venue from the perspective of design professionals on behalf NBA so the League could make informed decisions on which venue would best fit their needs.

Golden 1 Center. Project Architect- AECOM was selected to be the designer of the home to the Sacramento Kings in downtown Sacramento. In addition to creating a world-class sports facility and venue, the Golden 1 center is also an anchor of Sacramento's downtown revitalization plan which includes a new public plaza, destination shopping and 250 room hotel.

Barclays Center, Brooklyn, NY. Construction Administrator- Constructed as a design-build partnership with Hunt Construction, the 18,000 seat Barclays Center arena is the first professional sports venue is the cornerstone of the Atlantic Yards development in Brooklyn.

Company Overview

At AECOM, we're delivering a better world.

AECOM's global Buildings + Places business line brings together a versatile and collaborative team of planning, design and engineering professionals working to create livable, sustainable and equitable cities.

As the world's trusted infrastructure consulting firm, we're committed to managing our business with the utmost responsibility and to always strive for better – whether by reducing emissions, creating social value or diversifying our senior leadership and workforce.

Our global portfolio of work comprises the design of iconic and award-winning buildings and landscapes. From strategic planning through to project realization, the connections we make among people and places provide sustainable outcomes for our clients and the communities we serve. We place a premium on investing in digital capabilities and innovations which bring a unique consistency and efficiency to our scalable work. Our extensive expertise covers urbanism and planning, architecture and interiors, building and systems engineering, and cost and project management.

Together with our clients, we are working to evolve and elevate the built environment across sectors including social infrastructure, transportation and civil infrastructure, technology and logistics, and commercial and corporate real estate, while focusing on solutions that promote long-term health and wellbeing for all.

#1
ENR 2024
General Building

#2
ENR 2024
Top Design Firm

2500
Nationwide
Buildings + Places
Staff

51,000 people

#1 by Fortune magazine as the World's Most Admired Company in its industry

100% Rating on Corporate Equality Index / Best Places to Work for LGBT Equality 2024

ABOUT AECOM

Ownership: AECOM Technical Services, Inc. is a wholly owned indirect subsidiary of AECOM, a Delaware corporation whose stock is publicly traded on the New York Stock Exchange (ACM/NYSE).

Legal Entity Name:
AECOM Technical Services, Inc.

Legal Organization: Corporation

Federal Tax ID:
95-2661922

State and Date of Incorporation:
California - September 29, 1970

Dun & Bradstreet Number:
003184462

Primary and secondary SEC numbers:
C0608461

Corporate Address:
300 South Grand Avenue, 9th Floor
Los Angeles, CA 90071

Local Business Address (office responsible for providing services):
999 Town and Country Rd
Orange, CA 92868

Key Contact:
Calum Thompson, PE, CEM, LEED AP, ENV SP
Associate Principal, High Performance Buildings + Communities
310-467-7083
calum.thompson@aecom.com

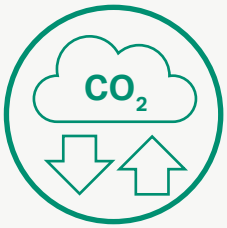
Authorized Representative:
Garrett Harper
Vice President, Managing Principal
312-373-7601
garrett.harper@aecom.com

Our ESG Strategy

Our strategy is straightforward: Have a positive, lasting impact on our communities and planet. We are focused on creating a sustainable legacy that is built on responsibility in our operations and the work we do in partnership with our clients.

Embed sustainable development and resilience across our work

Improve social outcomes



Achieve net-zero carbon emissions

Enhance governance

It's more important than ever for organizations to adopt environmental, social and corporate governance (ESG) commitments, and take action to deliver a better world. We're here to partner with you at every stage, from concept to design and delivery.

Our ESG advisory team helps public and private sector leaders assess the environmental and social issues facing their organizations and develops strategies to address these for long-term business resilience. A high-level advisory service, our ESG advisory team help senior leaders direct the future of their business, guiding and aligning strategies and actions that will create sustainable legacies for generations to come. Our advisory service is complemented by a suite of technical services to help implement your vision.

Our ESG advisory service gives you:

- Better overview of risk
- Competitive advantage
- Investor confidence
- Partnership appeal
- Trust and brand loyalty

Our advisory offer spans risk analysis to strategy development, governance and measurement, encompassing implementation and program delivery for those who want help getting the job done.

Learn more about AECOM's ESG strategy:

Equity, Diversity & Inclusion

We are committed to advancing equity, diversity and inclusion in our organization and within our industry. We build safe and respectful work environments where our employees are invited to bring their talents, backgrounds and expertise to bear on some of the world's most complex challenges and where everyone can thrive both personally and professionally.

The commitment to create a respectful, inclusive culture requires effort from all of us to remember that there are many points of view and tapping into this diversity of thought is what ultimately contributes to better outcomes. In 2021, we made it a priority for all employees to complete a global training on recognizing the negative impacts of unconscious bias and non-inclusive behaviors. In addition, we have established targets within each of our regions to advance our equity, diversity and inclusion goals.

We are advancing efforts globally in four key areas:

BUILDING DIVERSE TALENT

To tackle the world's most complex challenges, we attract, hire, and develop talented people of all backgrounds, and ensure inclusivity and fairness in our sourcing, interview and hiring processes. Through our partnerships with nonprofit organizations and universities, we offer robust internships, graduate development programs and volunteer opportunities that help give underserved populations access to STEAM education.

EXPANDING UNDERSTANDING

To help every employee feel valued and included, we're creating an inclusive workplace through community-building, training and family-friendly benefit policies.

We conduct regular employee surveys and "real talk" discussions to understand our employees' experiences and provide a forum for deeper understanding and empathy. Our employee resource groups create a sense of belonging and lead community outreach, and strategic mentorships promote ongoing dialogue and heightened awareness.

ENRICHING COMMUNITIES

Our Blueprint for a Better World platform reflects our responsibility to champion equity, diversity and inclusion in our communities through pro-bono work, volunteerism, philanthropy and strategic partnerships with global nonprofit organizations like Engineers Without Borders and Water for People. We deepen our engagement with communities through our commitment to supplier diversity, providing leadership to ensure that diverse-owned businesses are supported and successful.

THINKING WITHOUT LIMITS

Fostering equity, diversity and inclusion can't be done in a silo. By cultivating a workforce that more closely represents our clients and the communities we serve, we are able to better anticipate and respond to their needs. Further, we prioritize the social impact and benefits of equity, diversity and inclusion, factoring in these considerations into every project we pursue and the innovative solutions we deliver.

What is AECOM doing to advance equity, diversity and inclusion?

DIVERSITY

Ensuring our project teams reflect the diversity of the clients and communities we serve

WOMEN IN SENIOR LEADERSHIP

Ensuring women comprise 20% of senior leadership and 35% of overall workforce by 2025

ENRICHING COMMUNITIES

Ensuring that our work with clients and communities promotes social equity, diversity and inclusion

Microgrids/Smart Grids
Building for a Better Tomorrow

Managing a System of Systems

At its core, microgrids, smart grids and smart cities are all about resource management and understanding resource balances and interdependencies. The key is to accurately model demand/supply information and integrate across buildings and infrastructure.

AECOM'S MICROGRID AND SMART GRID PROGRAMS INCORPORATE ENERGY SAVING STRATEGIES FOR FACILITIES.

AECOM can provide a full suite of engineering design, program/construction management, and project delivery services to support a smart infrastructure architecture solution.

We focus on helping our clients reduce energy consumption, and develop renewable resources, cut carbon emissions and improve grid reliability. AECOM's comprehensive suite of energy services drives performance and produces innovative solutions.

At its core, microgrids, smart grids and smart cities are all about resource management and understanding resource balances and interdependencies. The key is to accurately model demand/supply information and integrate across buildings and infrastructure.

AECOM's multi-functional team of engineers, business analysts, policy experts, and marketing specialists offer exceptional delivery of energy programs that meet energy goals in a cost-effective manner.

AECOM capabilities includes:

- Asset management solutions (ISO 55000 compliant)
- Battery storage
- Building automation
- Communication network design, integration, and administration
- Data use and security
- Data use and technology
- Demand response
- Distribution automation
- Electric vehicles
- Energy management
- Infrastructure integration and optimization
- Microgrids
- Substation automation
- Supervisory control and data acquisition (SCADA) systems
- Volt/Var management

AECOM Imagine it. Delivered.

Microgrid Functions and Capabilities

AECOM's planners, economists, and utility market experts prepare case analyses for microgrid development. We address various ownership models: direct (maintain control of all aspects), joint (retain ownership and financing, but with third-party development, and operation), and third-party (outsource all to transfer risk). We have experience with various financing vehicles such as power purchase agreements, energy savings performance contracts, enhanced use leases, and direct financing.

DESIGN

AECOM offers a team organized to provide functional integration and foster innovation for each aspect of design. Our deep bench of in-house engineers optimizes microgrid design across a complete spectrum of disciplines: conventional/renewable distributed energy sources, energy storage, microgrid control, cybersecurity, permitting, and utility interconnection.

CONSTRUCTION

Program and construction management professionals from AECOM's energy services group have delivered energy projects to utilities, government and private clients. Our project management team is organized to manage the risk inherent in the complex undertaking of microgrid implementation.

CONSERVATION AND EFFICIENCY

Microgrids provide energy security and they extract efficiencies from the interrelationship of energy assets that, individually, may already be operating most efficiently. Does the savings to investment ratio and payback justify the effort? Does the project compete financially with other organizational imperatives?

SECURITY

The ability to disconnect from the macrogrid when it becomes unstable and continues to serve one's critical load with internal resources is a primary mission of a microgrid.

MARKET PARTICIPATION

Microgrids have the ability to mitigate price volatility. The barriers to entry into this market can be high, but for the right facility, the benefits can be worth the cost. If the facility's generation or demand response capacity are significant, and its energy operations staff is capable, it may make financial sense to pursue the development of a more complex microgrid.

Contract Mark-ups

Requested contract mark-ups for consideration are included in the following pages.

AECOM is the global infrastructure leader, committed to delivering a better world. As a trusted professional services firm powered by deep technical abilities, we solve our clients' complex challenges in water, environment, energy, transportation and buildings. Our teams partner with public- and private-sector clients to create innovative, sustainable and resilient solutions throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. AECOM is a Fortune 500 firm that had revenue of $16.1 billion in fiscal year 2024. Learn more at aecom.com.

aecom.com

Western Riverside Council of Governments
Technical Advisory Committee

Staff Report

Subject: VMT Mitigation Program Activities Update

Contact: Chris Gray, Deputy Executive Director, cgray@wrcog.us, (951) 405-6710

Date: January 16, 2025

Recommended Action(s):

1. Receive and file.

Summary:

Senate Bill (SB) 743, implemented on July 1, 2020, requires development projects to utilize Vehicle Miles Traveled (VMT), rather than Level of Service (LOS), as the metric to determine its transportation impacts under the California Environmental Quality Act. WRCOG assisted its member agencies in the implementation of SB 743 with guidance on meeting the requirements of the Bill. To continue with the implementation of VMT as a metric, WRCOG has been actively working with partner agencies to develop a VMT mitigation program manual. Staff will present an overview of the manual and then discuss next steps.

Purpose / WRCOG 2022-2027 Strategic Plan Goal:

The purpose of this item is to provide an update and next steps of the potential regional VMT mitigation program which would be available to each member agency to opt-in when available. This report is not requesting any approval of a program. This effort aligns with WRCOG's 2022-2027 Strategic Plan Goal #5 (Develop projects and programs that improve infrastructure and sustainable development in our subregion).

Discussion:

Background

One objective of WRCOG's Local Transportation Funds (LTF) Program with the Riverside County Transportation Commission (RCTC) is to assist WRCOG with SB 743 implementation. As part of this, WRCOG conducted initial research on a possible VMT mitigation program or bank strategies for development projects as part of its SB 743 implementation activities. This initial research was presented to the Public Works Committee (PWC) in May 2021 and, as a result, WRCOG received inquiries from member agencies regarding the development of a potential regional VMT mitigation program for western Riverside County.

During WRCOG's work on SB 743 implementation, the issue of VMT mitigation was noted to be problematic. The main reason is that most land-use projects cannot implement transportation system improvements or directly influence the travel of its occupants. VMT is a function of the intensity of use, type of use, and location, so the main challenge is that VMT is ultimately a regional, not local, concern. In comparison, LOS-based impacts are relatively easy to mitigate since payment of fees for improvements or construction of improvements, or some combination thereof, are appropriate mitigation.

On October 4, 2021, WRCOG staff received direction from the Executive Committee to evaluate options to mitigate VMT impacts from new development. WRCOG commenced an effort to develop a potential program for western Riverside County, and has been discussing with RCTC and the Riverside Transit Agency (RTA) the different elements and options. These two agencies were identified since they would be potential large credit generators and/or credit users if they choose to participate. Participation in any potential program will be on a voluntary basis, so member agencies will participate in a program only if it decides to opt-in.

Since this due diligence process has taken place, the project team has looked at potential benefits and challenges to the different types of mitigation programs and its framework, such as banks, exchanges, and impact fee programs. The project team has also considered the key elements of additionality and equity. In addition, the project team has been exploring potential governing structures of the program and the different elements of operating a program. The project team includes WRCOG's legal counsel to ensure all elements of the program are analyzed from all aspects.

The mitigation measures included will influence the type of program, so the project team has been working with member and partner agencies to identify potential mitigation measures to be included. WRCOG reached out to interested PWC members in February 2023 to solicit potential projects and programs that could be included in a program to serve as an initial project list. Additional projects and programs may be added. The project team is in the process of estimating the potential VMT reduction associated with the projects and programs, determining which projects and programs will be most effective throughout the subregion, and identifying specific areas that should be targeted for participation to maximize the benefits of the program. The project team also completed an equity analysis to consider demographic trends, including historically disadvantaged communities when identifying which projects and programs could be included in a regional VMT mitigation program.

Present Situation

All of the technical work and research on a potential VMT mitigation program has been completed. A draft program manual has been finalized and is currently being reviewed by various stakeholders including RCTC, Riverside Transit Agency, and Western Riverside County Regional Conservation Authority. Once that review is complete, this document will be provided to members of the Planning Directors Committee (PDC) and the PWC.

Some key elements of the effort proposed by WRCOG are as follows:

- The program would be a regional effort with WRCOG serving as the Program Administrator.
- The effort would be structured as an exchange instead of a bank or fee.
- The PDC would provide direct oversight of the program with the Executive Committee retaining final jurisdiction as with all WRCOG activities.

- Agencies would agree to join the program by executing an agreement with WRCOG.
- Agencies which have formally joined the program can then submit VMT-reducing projects to be included in the program.
- Only public agencies can submit VMT-reducing projects to be included in the program.
- WRCOG would compile a list of VMT-reducing projects.
- These VMT-reducing projects would then be available to be purchased to generate VMT credits.
- Any public entity or private entity can purchase VMT credits by selecting one or more projects from those available on the list WRCOG maintains.
- WRCOG would collect a nominal administrative fee (4%) based on the program costs for this transaction.
- WRCOG would refresh the program list as appropriate.
- Agencies can choose to participate in WRCOG's program, participate in other regional programs, develop their own program, or any combination of those three. The only limitation is that an agency is not allowed to submit the same credit generator item to multiple programs.

Graphics depicting the operation of a program are provided as Attachment 1. The flowcharts describe the following program elements:

- Overall Program Process
- Process for Credit Generators
- Process for Submitting Credit-Generating Items
- Process for Private Sector Requests for Credit
- Process for Public Sector Requests for Credit
- Appeals Process

This information was shared with the PDC and the PWC on December 12, 2024.

Next Steps

Following distribution of the program manual, WRCOG will be bringing this item to the Executive Committee for review and potential implementation later in 2025. At this time, we are not asking for any formal commitment from member agencies. However, any member agencies which are potentially interested should notify WRCOG so that information can be shared during discussions with the Executive Committee.

Prior Action(s):

December 12, 2024: The Public Works Committee received and filed.

December 12, 2024: The Planning Directors Committee received and filed.

November 6, 2023: The Executive Committee received and filed.

October 12, 2023: The Public Works Committee received and filed.

October 12, 2023: The Planning Directors Committee received and filed.

February 10, 2022: The Planning Directors Committee received and filed.

May 13, 2021: The Public Works Committee received and filed.

Financial Summary:

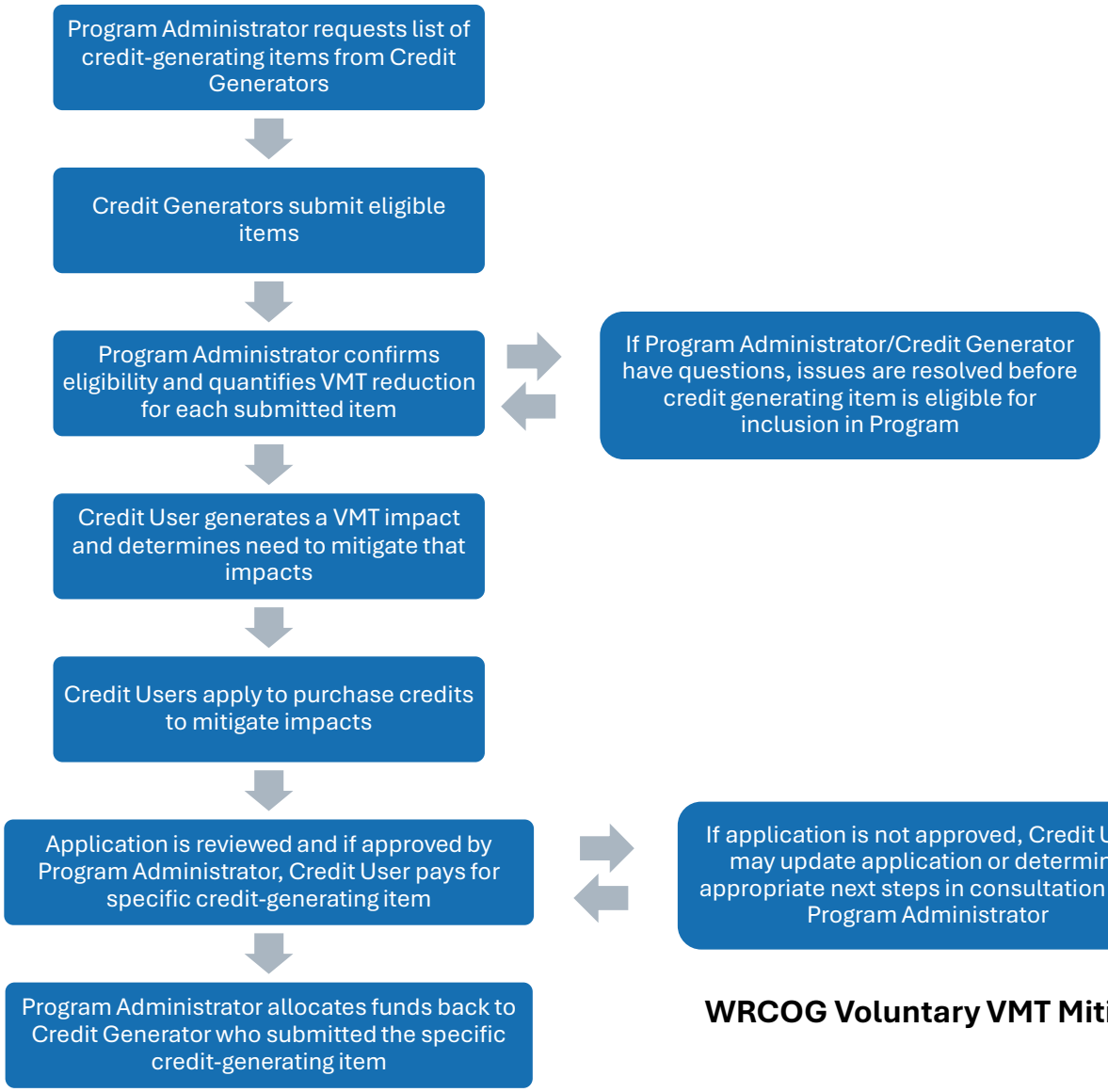
Costs for initial program evaluation and development are funded by LTF (Fund 210) and included in the Fiscal Year 2024/2025 Agency Budget. Should WRCOG elect to implement a program, on-going funding would be provided by an Administrative Fee which would be assessed on credits purchased by public sector and private sector entities.

Attachment(s):

Attachment 1 - WRCOG VMT Exchange Flowcharts

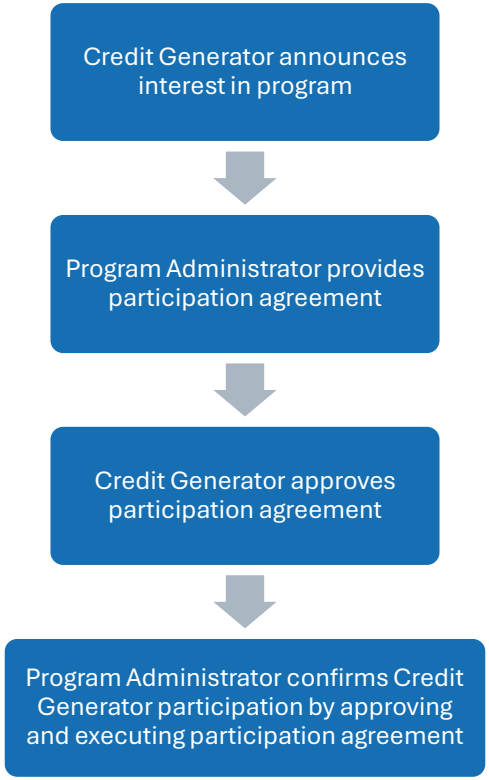
WRCOG
Voluntary VMT Mitigation Exchange Program

Process Flowcharts



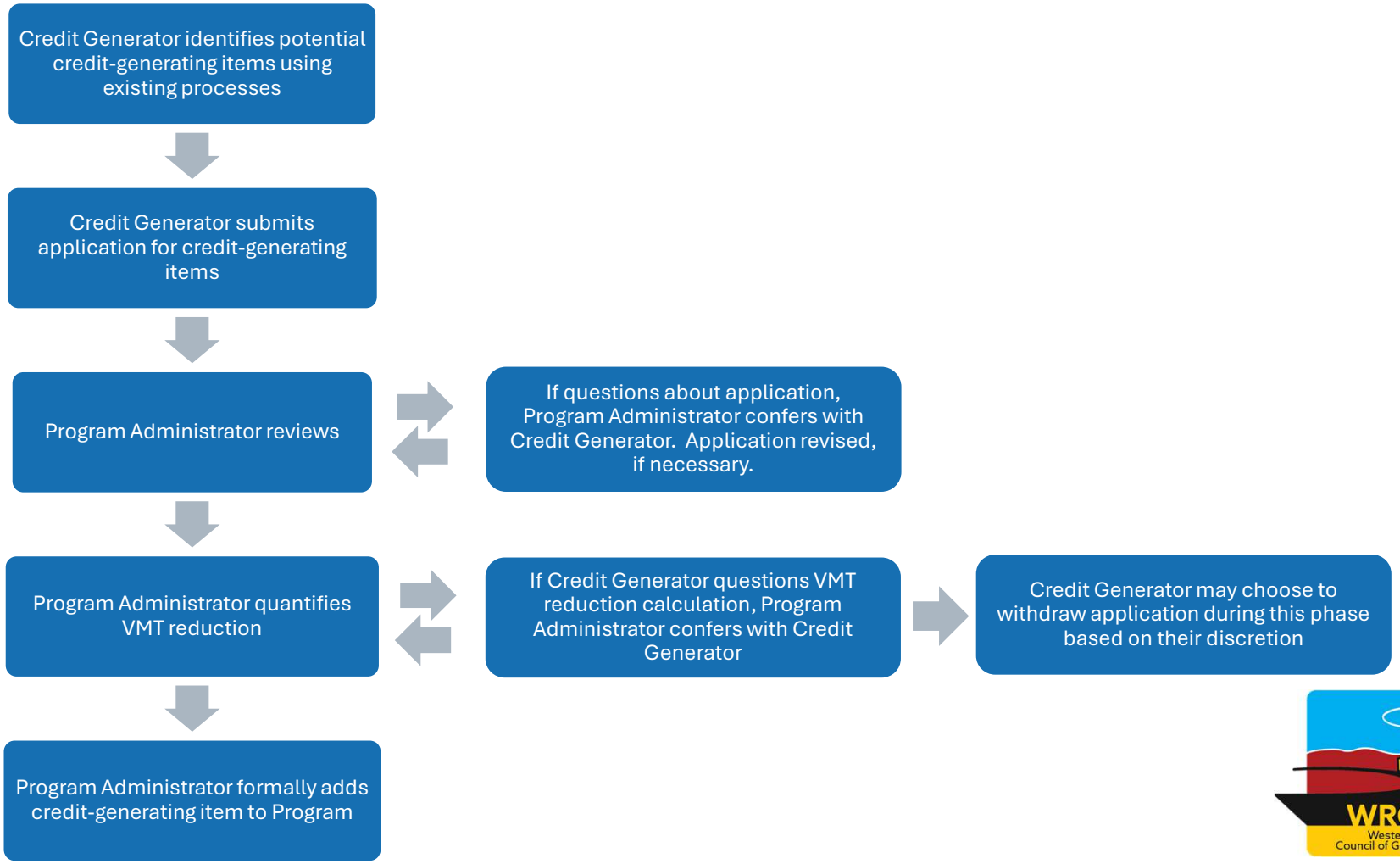
WRCOG Voluntary VMT Mitigation Exchange Program

Overall Program Process



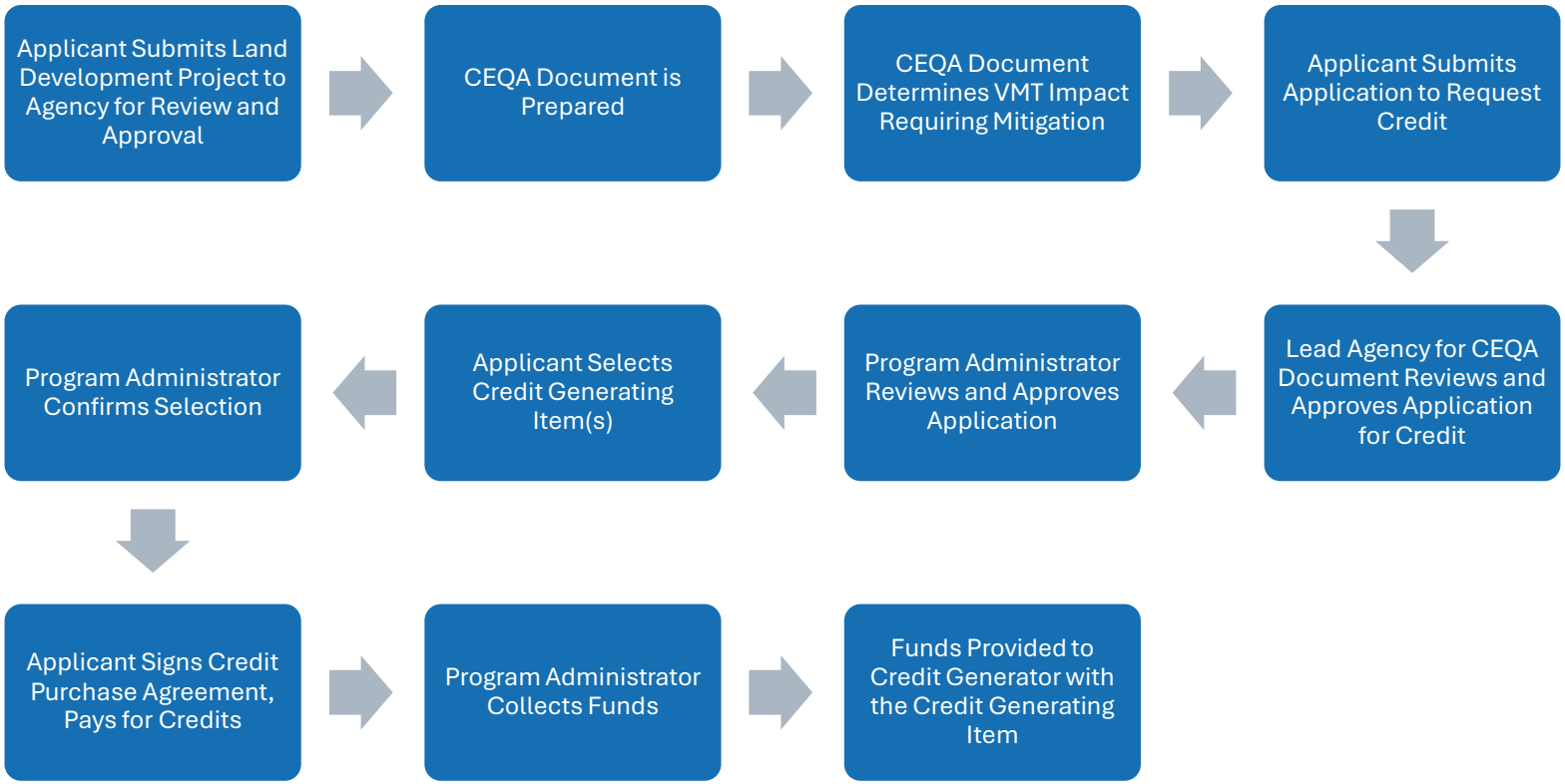
WRCOG Voluntary VMT Mitigation Exchange Program

Process for Credit Generators



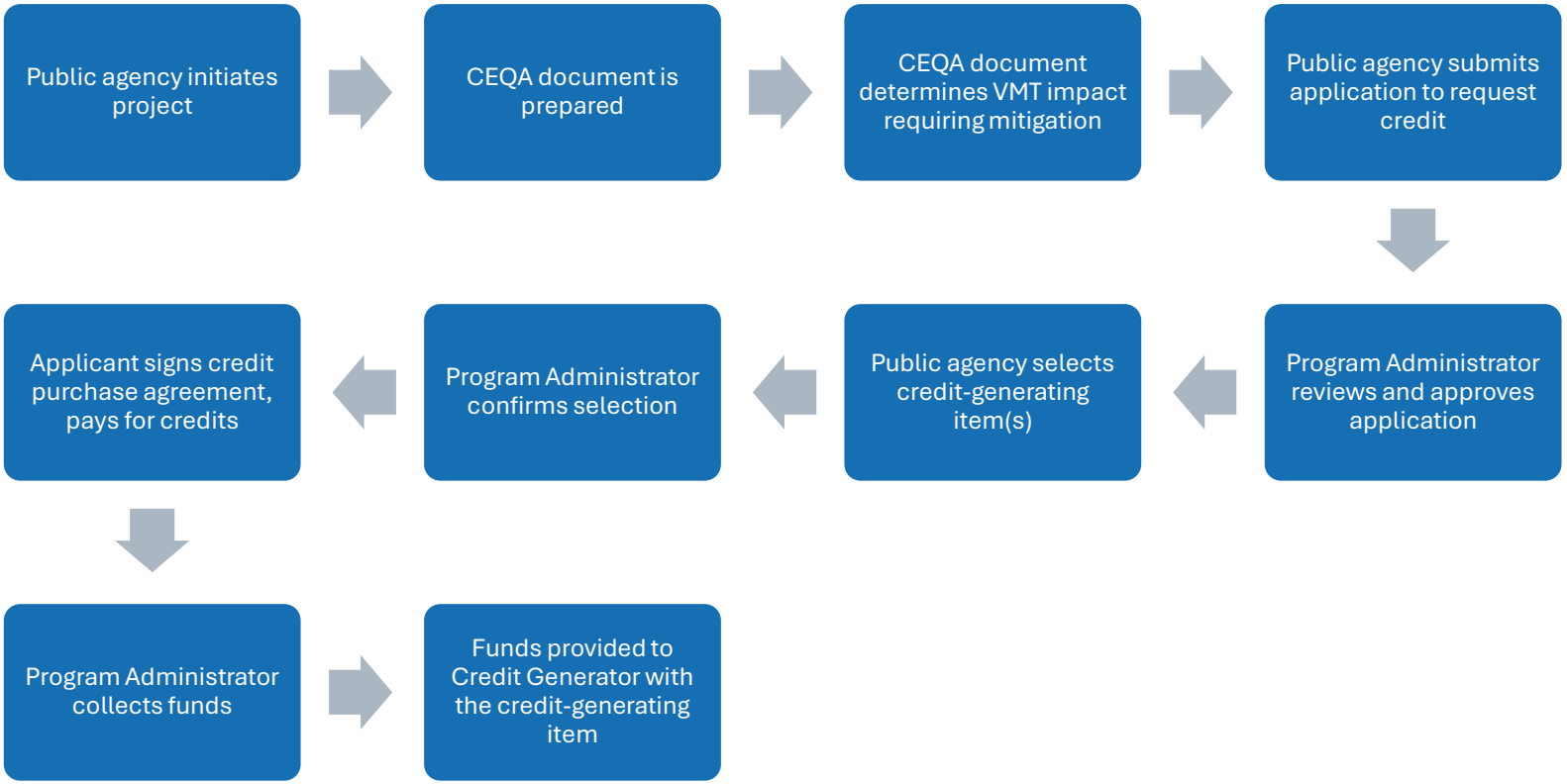
WRCOG Voluntary VMT Mitigation Exchange Program

Process for Submitting Credit-Generating Items



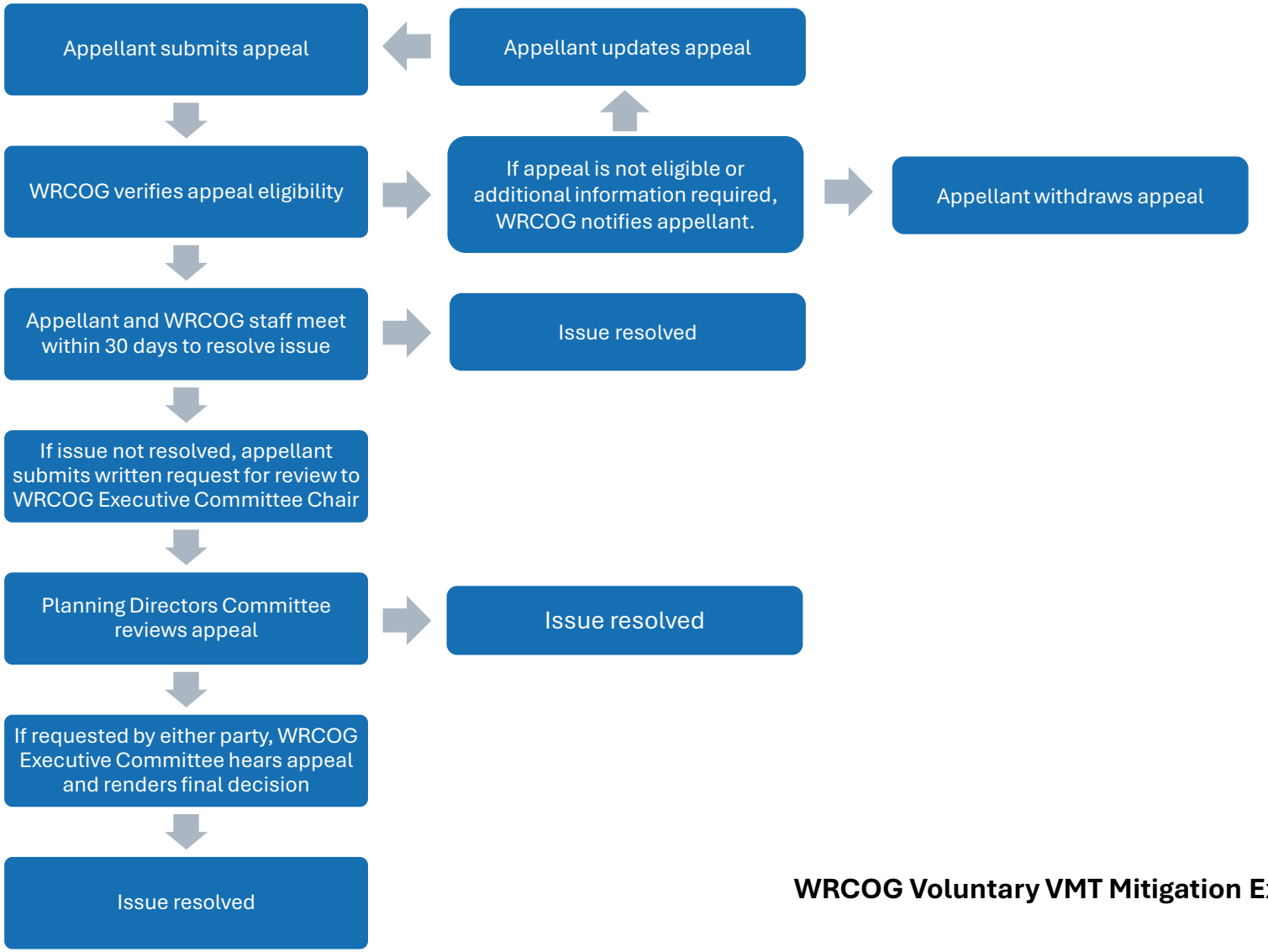
WRCOG Voluntary VMT Mitigation Exchange Program

Process for Private Sector Requests for Credits



WRCOG Voluntary VMT Mitigation Exchange Program

Process for Public Sector Request for Credits



WRCOG Voluntary VMT Mitigation Exchange Program

Appeals Process