

**Energy Insecurity Workgroup Facilitation: Framework Implementation and Guidebook**

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### Abstract

Energy insecurity has become increasingly common in Maricopa County, Arizona. Households are not able to meet energy demands, resulting in vulnerability and the sacrifice of basic needs. Various root causes and pathway dependencies have exacerbated this issue, creating detrimental health, societal and environmental outcomes.

The project, Energy Insecurity and Public Health: Going Further through Cross-Sector Collaboration, aims to improve the health of communities by promoting projects that are community-engaged, action-oriented, and equity-focused (Interdisciplinary Research Leaders, 2020). Eventually, the final deliverable of this project will be an energy insecurity toolkit that can be leveraged by stakeholders to make a change in their local communities. To achieve this deliverable, a stakeholder workgroup was created to assess all aspects of energy insecurity in Maricopa County. To avoid typical pitfalls of stakeholder workgroups, the Learning and Action Alliance (LAA) Framework was chosen to be applied to the workgroup. The LAA Framework leverages social learning and promotes knowledge sharing between stakeholders (O'Donnell et al, 2018). The framework is implemented in five phases and can be customized to fit any wicked problem.

The accompanying guidebook, *'Applying the Learning and Action Alliance Framework: Energy Insecurity in Maricopa County'*, was created to simplify the framework's implementation phases and provide 'real-world' examples of how the framework was implemented into the energy insecurity stakeholder workgroup. The guidebook will be used by the Maricopa County Department of Public Health to facilitate other sustainability workgroups. Thus far, the Maricopa County Department of Public Health has approved and is looking forward to integrating the guidebook into workgroup standard practices.

*Keywords:* energy insecurity, stakeholder workgroup facilitation, social learning, wicked problems, extreme weather events

**Table of Contents**

<b>Introduction and Background.....</b>	<b>4</b>
<b>Energy Insecurity Causes.....</b>	<b>4</b>
<b>Energy Insecurity Effects.....</b>	<b>5</b>
<b>Project Details.....</b>	<b>6</b>
<b>Literature Review.....</b>	<b>7</b>
<b>Approach and Intervention Methods.....</b>	<b>8</b>
<b>Outcomes.....</b>	<b>14</b>
<b>Recommendations.....</b>	<b>15</b>
<b>Conclusions.....</b>	<b>16</b>
<b>Appendix.....</b>	<b>18</b>
<b>Acknowledgements.....</b>	<b>19</b>
<b>References.....</b>	<b>20</b>

## **Introduction and Background**

Climate change has created many threats for humans, one of the most pressing issues being extreme weather events. Extreme weather events are hazards that extensively impact the quality of life for humans. Temperatures exceeding 110 degrees are considered extreme heat (EPA, 2016) and are responsible for the highest mortality rate out of all extreme weather events (Lisa, 2020). In 2020, extreme heat was responsible for more than 600 deaths per year in the United States (CDC, 2020). Arizona in particular has many extreme heat events. The National Weather Service reported 43 extreme heat warnings for Phoenix in 2020. In Maricopa County, summer of 2020, there were 55 confirmed heat-related deaths, and 266 deaths are still under investigation (Webb, 2020). Although some of these deaths were attributed to outdoor heat exposure, indoor heat-associated deaths are common as well. In fact, in Maricopa County, one out of four heat-related deaths occurred indoors in 2019 (AZEIN, 2020). As temperatures continue to rise, the struggle to meet energy demands and afford cooling strategies will become increasingly difficult. People who are energy insecure and not able to afford household energy will disproportionately be affected by the escalating extreme weather events. To address indoor heat-related deaths in Maricopa County, there is a need to understand who is affected, the barriers to receiving cooling indoors, and the impacts of energy insecurity. However, the causes of energy insecurity are interconnected and dispersed across sectors.

### Energy Insecurity Causes

It is difficult to identify the true culprit of energy insecurity, as many causes contribute to this wicked sustainability problem. One of the root contributors is climate change, which intensifies the degree of heat as well as duration of heat (EPA, 2016). Extreme heat events will occur regularly and increase dependence on electricity. Another root cause is poverty. Previous energy insecurity research found that households that experience poverty are most likely to experience energy insecurity (Hernandez, 2016). In addition to climate change and poverty, inequitable education can also be considered a cause. An individual who is without a formal education is less likely to access financial subsidies or assistance programs that prevent the disconnection of energy services (Jessel, 2019). “On

average, those with less educational attainment have more limited income potential, making it more difficult to afford and make energy payments” (Jessel, 2019). These inequities demonstrate that socioeconomic status is connected to energy insecurity.

An additional cause of energy insecurity is housing. Low-income renters tend to live in homes that are not properly insulated and are without energy efficient mechanisms. This leads to higher than average electricity bills if landlords are reluctant to upgrade the property or allow tenants to install updates (Hernandez et. al, 2016). Another contributor is the implementation of energy policies that support new infrastructure or the adoption of renewable energies. These policies may increase electricity cost for the consumer, which disproportionately affects people already experiencing energy insecurity (Fischer, 2010).

### Effects of Energy Insecurity

Many suffer from energy insecurity in the privacy of their own homes, which leads to this issue being unseen and disregarded (Columbia, 2018). The effects of energy insecurity primarily impact existing, marginalized populations. These affected individuals include those who are low income, unhoused individuals, the elderly, people of color, children, and outdoor workers (CDC, 2017). Further, families that struggle with energy insecurity are more susceptible to developmental delays in children, hospitalizations, and food insecurity (Cook, 2008). They are often forced to choose which basic needs to pay for each month. Families must decide between food, rent, electric, water, or health costs. It was reported that 1 in 5 households forgo necessities, such as food or medicine, to pay for an energy bill (EIA, 2015). Often, some basic needs must be sacrificed in favor of others. There are several negative physical health effects caused by enduring extreme heat for lengthy periods. These include heat stroke, exhaustion, dehydration, and exacerbation of preexisting conditions. Heat exposure can also cause mental health effects such as irritability, loss of concentration, and difficulty completing skilled tasks (CCOHS, 2016). Long-term exposure to extreme heat is significantly harmful and affects the ability for someone to start a family, produce quality work in their professional life, and meet basic needs. Another negative outcome

of energy insecurity and endured extreme heat is death. Each summer, deaths occur due to indoor heat exposure without a cooling mechanism. In 2018, 96% of people that died as a result of heat-related causes were residing in ‘non-cooled’ indoor environments (Maricopa County, 2018). In 73% of those cases, air conditioning was present but not working, and in 17% of cases, the AC was turned off (Maricopa County, 2018). A report from Maricopa County found that there were 197 heat-related deaths in 2019; 182 heat-related deaths in 2018; and, prior to 2016, it was reported that there was an average of 100 heat-related deaths each year (Boehm, 2020). This trend suggests that, as temperatures continue to rise, the number of deaths due to extreme heat and energy insecurity will also increase.

### Project Details

The American Council for an Energy-Efficient Economy (ACEEE) was granted funding to address energy insecurity in Arizona. Experts from ACEEE, The Maricopa County Department of Public Health, and Columbia University partnered to pursue this project. Dr. Lauren Ross from ACEEE, Dr. Vjollca Berisha from Maricopa County Department of Public Health, and Dr. Diana Hernandez from Columbia University are the project leads. The project, *Energy Insecurity and Public Health: Going Further through Cross-Sector Collaboration*, aims to improve the health of communities by promoting projects that are community-engaged, action-oriented and equity-focused (Interdisciplinary Research Leaders, 2020). Energy insecurity is targeted as it has public health, social, environmental, and economic implications. The final overall deliverable of this project will be an Energy Insecurity Toolkit that uses various metrics to measure the prevalence of energy insecurity to assist stakeholders in delivering targeted solutions. To fulfill the project scope, a workgroup of relevant stakeholders was created to accurately assess and create solutions for energy insecurity. The LAA framework was used in this project to facilitate the workgroup and increase innovation in the drive to eliminate energy insecurity. My role was to apply the framework to the workgroup, create a simplified implementation process, and demonstrate the benefits of this framework in the accompanying guidebook: *Learning and Action Alliance Framework Addressing Energy Insecurity*. This guidebook will be used by the Maricopa County Department of

Health to facilitate future cross-sectoral sustainability workgroups. The guidebook will also be evaluated by the Maricopa county department of public health

### **Literature Review**

In response to increased heat deaths stemming from energy insecurity, stakeholders from multiple sectors will collaborate to examine causes, effects, and potential solutions to energy insecurity in Maricopa County. Stakeholder collaboration will lead to a replicable research method that can be used to accurately track energy insecurity and create policies to address energy insecurity. If collaboration is not supported, passive participation, ineffective cooperation, and stifled creativity will negatively impact the quality of project deliverables. To counter these potential barriers, the LAA Framework outlines a strategy to support social and active learning in stakeholder workgroups (O'Donnell et.al., 2018). This literature review examines LAA Case Studies and illustrates the applicability of this framework to wicked sustainability problems.

LAA's "are open arrangements wherein participants with a shared interest in innovation and implementing change create a joint understanding of a problem and its possible solutions based on rational criticism and discussion" (O'Donnell et.al., 2018; Ashley, 2012). LAA's leverage social learning and promote knowledge sharing between people at the same level in an organization (horizontal communication) and between different hierarchical levels (vertical communication) (O'Donnell et.al., 2018). Through these arrangements, stakeholders should feel like they are able to speak openly and honestly, forgoing traditionally formal arrangements. It is important that, "the emphasis is on development rather than transfer of knowledge through joint learning where there are no established experts" (Gourgoura et. al., 2015). LAA benefits include the ability to share data, free discussion of ideas, knowledge transfer, and contact sharing. Despite these tangible benefits, it is important to note that LAA's have only been utilized for urban water-related stakeholder collaboration. However, LAA's are not bound within the scope of one single issue. The foundations of this framework have the potential to demonstrably improve outcomes for workgroups focused on solving non-water-related wicked problems as well.

In literature, the most common approach to implementing the LAA framework is following the 5-phases outlined by Ashley (2012):

1. Initialization
2. Scoping and Context
3. Creating a Shared Vision
4. Implementation
5. Practice

The 5-phases method is widely accepted and is used in every literature piece summarizing LAA case studies since 2012. The 5-phases method provides a set of steps to implement the framework, but can easily be customized and tailored to fit individual workgroup needs. The 5-phases method is supported by experts and literature.

### **Approach and Intervention Methods**

The LAA framework applied to the energy insecurity workgroup has improved cross-sectoral collaboration and innovation between stakeholders, resulting in a decreased rate of energy insecure households. The framework was applied to the energy insecurity workgroup in the 5-phases as outlined by Ashley, (2012). The process and experiences captured are included in the Guidebook: *Learning and Action Alliance Framework Addressing Energy Insecurity*. The guidebook will be used to simplify the LAA implementation process and explore how this framework benefits sustainability-related workgroups. The guidebook will increase the usage of the LAA framework for sustainability workgroups, leading to greater innovation and wicked problem-solving.

The first step to implementing the LAA framework and developing the accompanying guidebook was researching framework-specific case studies and expert recommendations. I began by reading literature pieces about the LAA framework and progressed to specific case studies which included MARE (Mekel et al, 2013) and Newcastle (Blue Green Cities, 2016). Next, I developed a plan on how to apply the framework



using the 5-phase implementation method. Due to a limited timeline, I was only able to implement phases 1-3. My project partners will follow my framework plan to finish implementing phases 4 and 5.

### Phase 1: Initialization

#### *I. In Theory*

The initialization phase begins by identifying the wicked problem and establishing an initial group of interested parties (Ashley, 2012). Each LAA will require at least two facilitators to organize the workgroup, present the wicked problem, and focus the stakeholders (Batchelor et al., n.d.). Leadership training may be beneficial for facilitators before starting the initialization phase. The process of stakeholder engagement should begin in this phase by mapping stakeholders to ensure all relevant industries and perspectives are included. Once stakeholders are invited to participate in the LAA, the organizing group will be responsible for managing expectations.

#### *II. In practice*

After defining the scope of the project, local stakeholders were invited to participate in the energy insecurity-focused workgroup. Local utilities, health organizations, housing representatives, interfaith organizations, and city officials were some of the stakeholders involved. Stakeholders were mapped by the interdisciplinary researchers to ensure all vital parties were included. Alternatively, there are established stakeholder mapping frameworks that can be used instead of subject matter expertise. It is imperative to manage stakeholders' expectations and to demonstrate the value of their pro bono work (O'Donnell et al., 2018). In this project, expectations were re-visited throughout Phases 1-3.

### Phase 2: Scoping and Context

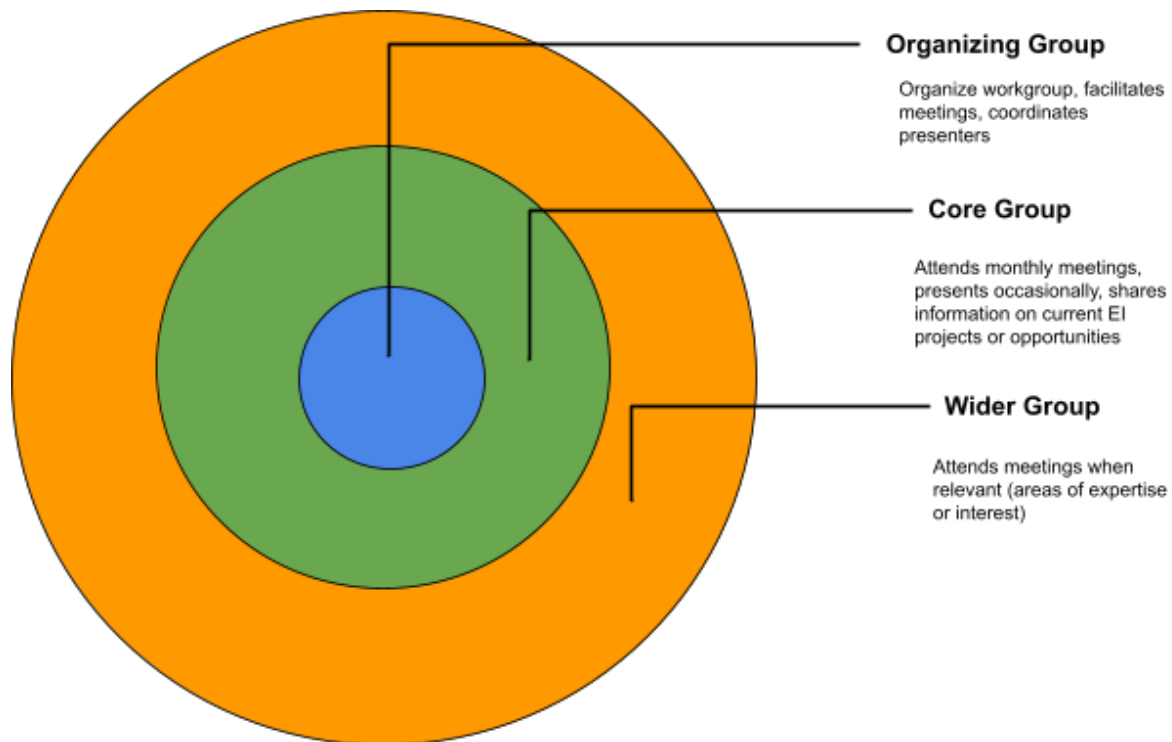
#### *I. In theory*

The searching and scoping phase consists of identifying the political and physical reach of stakeholders and classifying tactical stakeholders (Ashley, 2012). Membership of the LAA should be inclusive and enrich the project with experts knowledgeable about the issue. To map stakeholders, the LAA Membership model is used [Figure 1]. The LAA Membership model differentiates stakeholders by categorizing them into three groups: Organizing, Core, and Wider group. The organizing group is

responsible for facilitating and attending meetings, coordinating the workgroup, and ensuring collaboration occurs between workgroup members (O'Donnell et al., 2018). The core group attends regular meetings, shares information, and raises awareness for the given issue (O'Donnell et al., 2018). The wider group attends meetings as needed (typically based on interest or expertise) and participates on an irregular basis (O'Donnell et al., 2018). The role criteria for these LAA membership types is ubiquitous among the LAA literature; however, roles can be tailored based on need and workgroup characteristics. Additionally, tactical stakeholders should be involved.

## *II. In practice*

Organizing stakeholders into this model proved to be very difficult. There was no easy way to communicate to a stakeholder that they were less relevant to this issue than another. Due to categorizations, labeling stakeholders into these groups was difficult because we did not want to diminish a stakeholder's role or belittle their involvement. We ended up defining roles and responsibilities for each level of membership [Figure 1] and allowed stakeholders to self-organize.



**Figure 1.** Adapted from O'Donnell, 2018. LAA Membership Model with Criteria

### Phase 3: Creating a Shared Vision

#### *I. In theory*

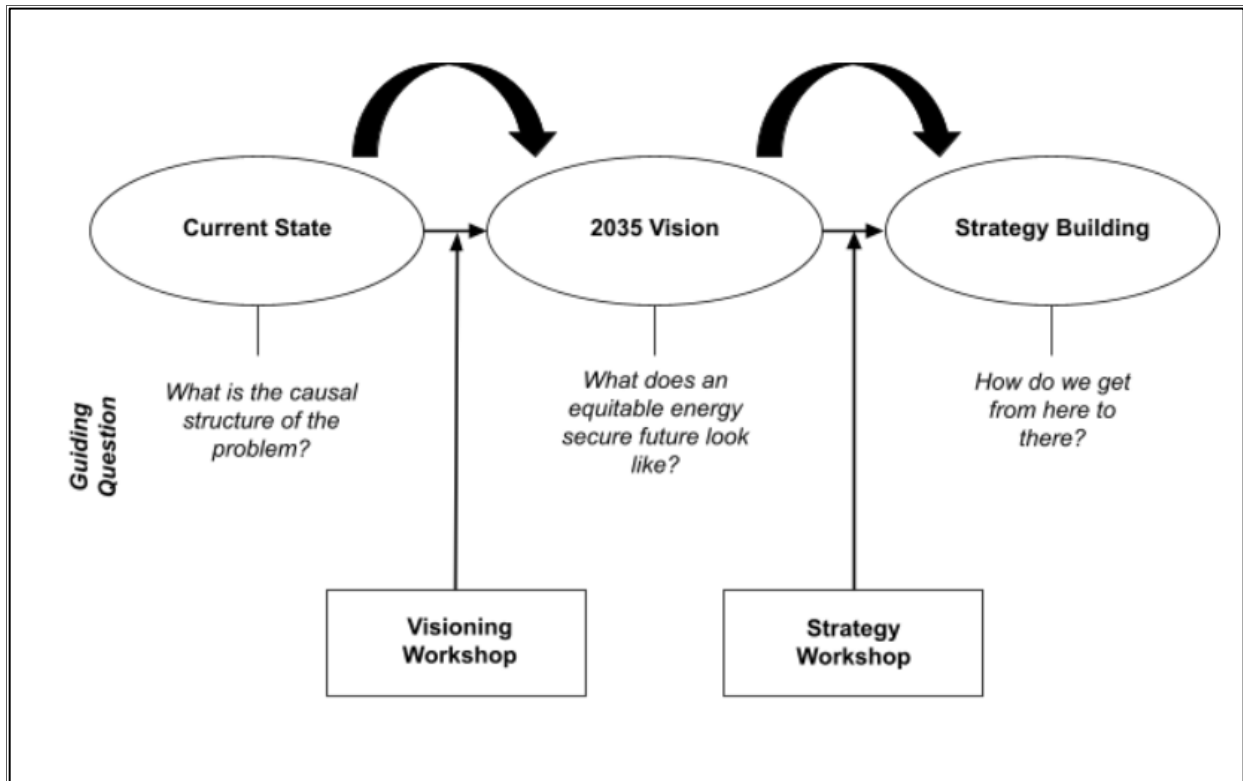
The next step is for stakeholders to create a shared vision. A shared vision is created through bartering and negotiation between stakeholders and provides the opportunity for them to learn from each other's unique perspectives. The visioning process can be completed in a workshop, focus group, or open discussion; however, it is critical in this phase that stakeholders are given enough time to interact, fully discuss, and agree upon the vision. Another component of this phase is the creation of a Terms of Reference and Strategic Objectives. These supplementary materials outline vision elements, the mission of the LAA, responsibilities of members, and objectives to achieve the vision.

#### *II. In practice*

A vision is a powerful tool that can guide professionals when evaluating and solving wicked problems. A vision exemplifies a “desirable future state or goal to be achieved” (Wiek, 2015). Visioning typically begins after a current state analysis of the wicked problem where the causal structure of the problem is analyzed. A vision transports stakeholders to a desirable and sustainable future state that is more than just wishful thinking. A sustainable vision is coherent, tangible, plausible, and motivational (Wiek, 2015). Furthermore, a sustainable vision should be evidence-based and consist of remarkable change. Incremental change is often deceiving and alludes to progress; however, this method of change prohibits the realization of actual transformational future states. Often, Nowtopias are relied upon during the visioning process (Carlsson, 2008). Nowtopias are defined as exemplary pilot projects that generate transformational changes as described above (Wiek, 2015). Nowtopias can be used to prove that any given vision element is plausible.

The following model [Figure 2] outlines when the workshop should intervene in the workgroup model. The visioning process promotes dialogue between stakeholders and leverages the argumentative process for stakeholders to debate opinions and aspirations. However, creating a shared vision among

stakeholders can be quite challenging- especially if stakeholders are polarized or if experiences and knowledge are not shared.



**Figure 2.** Adapted from Wiek, 2015. *Causal Structure Model*.

To combat these challenges, I designed a visioning workshop to allow space for social learning and creating a plausible vision. The workshop, “Envisioning an Energy Secure Future for Maricopa County, AZ” was conducted to develop a shared vision within the workgroup. The goal of this workshop was for stakeholders to create and agree upon an initial vision for an energy secure Maricopa County in 2035. The workshop was designed to briefly recap that causal structure of the problem, review a preliminary vision for an energy secure future, and capture the opinions and thoughts of stakeholders. Stakeholders were separated into groups of 4-6 to discuss issues and feedback throughout the workshop. The visioning process began with the workshop; however, more feedback from stakeholders was needed. Follow up surveys were sent to stakeholders to continue to gather feedback and opinions.

#### Phase 4: Implementation

### *I. In theory*

The Implementation phase focuses on exploring and implementing possible solutions (O'Donnell et al, 2018). In this phase, quick wins are key (Batchelor et al, n.d.). For example, past LAA case studies have implemented quick wins by integrating solutions into existing projects while simultaneously exploring long-term solutions. Delivering a quick win will invigorate stakeholders and encourage continuous progress towards the shared vision. These wins will encourage stakeholders to explore challenging long-term solutions to wicked problems.

In Phase 4, typically strategy building occurs over three to six months and follows the nine steps as outlined in Batchelor et. al, (n.d.). It is beneficial if someone familiar with the strategy building process facilitates the searching and scoping phase.

Energy insecurity stakeholders will be engaged in each of the following steps:

- **First**, stakeholders will identify components of the overall vision (Batchelor et. al, n.d.). This action will occur in two or three conversational brainstorming sessions where all stakeholders are present. Ideas for opportunities that can be integrated into the overall vision will be listed. These strategy suggestions can be inspired by existing common practices or by new and innovative approaches. Examples of existing practices include electric utilities offer programs to alleviate energy burdens on low-income households, or non-profits support poverty alleviation programs. New and innovative approaches can be developed by stakeholders or adapted from transformational pilot projects.
- **Second**, “assess the social, technical, political, economic and environmental viability and acceptability of each strategy component especially those that are new to the stakeholders” (Batchelor et. al, n.d.). Once the vision is completed, stakeholders will develop 3-4 possible future scenarios. By the time this step is finished, all vision components will have been discussed and either accepted, rejected, or adapted.

- **Third**, barriers and risks will be determined (Batchelor et. al, n.d.). Strategy components developed in the second step will be reflected on to assess the barriers and risks and whether they will interfere with the fulfillment of the vision. After that is accomplished, the strategy components will be compared to ensure one strategy component did not inhibit another.
- **Fourth**, vision elements, strategy components, and scenarios will be linked and analyzed through a visual method, such as a table as depicted below [Figure 3]. The following table was completed using the premise of a hypothetical example [Figure 3].

Vision Elements	Strategy Components	Scenarios			
		I	II	III	IV
Energy equity is a priority.	<ul style="list-style-type: none"> <li>• Energy policy is mindful of rate increases.</li> <li>• Subsidies are targeted.</li> </ul>	?	X	✓	?
.....					

**Figure 3.** Adapted from Batchelor et. al, n.d.. Example Provisional Assessment of Strategy Components.

**Key:** ?= Unknown, X= Rejected, ✓= Accepted

- **Fifth**, the table created in the previous step will be reviewed [Figure 3]. Then, assess whether the strategy components have the capability to achieve the vision element in each scenario will be assessed. Findings will be documented with a ?, X, or ✓.

- **Sixth**, any strategy components that do not align with the scenarios will be reviewed. Amending the strategy components to align with scenarios is one option. If that course of action is unsuccessful, the vision element will be amended so that it may be achieved.
- **Seventh**, different strategy components will be combined to create potential overall strategies. The strategies will be cross-checked with the original vision to ensure cohesion among all of the strategy components. Next, check that strategies are transformational and considerate of marginalized groups. This step will produce various overall strategies where the cost, benefits, and trade-offs have been analyzed.
- **Eighth**, stakeholders will choose one solution strategy to pursue. This decision will require an argumentative process between stakeholders.
- **Ninth**, the planning process will commence. This process may expose flaws or ideas that had not been considered in the strategy building process.

#### Phase 5: Capture

##### *I. In theory*

The last phase is the capture phase. In this part, the implemented solutions are analyzed to assess whether they achieve the shared vision. If the implemented solutions do not achieve the visionary state, or the stakeholders are dissatisfied with the outcomes, the workgroup can continue collaborating to achieve a different outcome. In this situation, the workgroup would return to Phase 2 of the framework and redefine goals or the scope of the project. Additionally, all information is made publicly available so the project and solutions can be studied and replicated.

### **Outcomes**

I provided consulting work for the Maricopa County Energy Insecurity workgroup and project team. I implemented Phase 1-3 of the LAA framework and completed an implementation plan for Phase 4 and Phase 5. As part of Phase 3, Creating a Shared Vision, I conducted a visioning workshop with stakeholders. \*workshop data will be included here\*

*'Applying the Learning and Action Alliance Framework: Energy Insecurity in Maricopa County'* Guidebook is now accessible to Maricopa County Department of Public Health staff and accessible on the ASU Repository webpage. The guidebook is the first nonacademic LAA material that has provided examples on how to implement the framework phases. The guidebook is composed of an introduction and three sections. The introduction reviews how to use the guidebook, the purpose of stakeholders, common stakeholder challenges, and how the LAA framework can address those challenges. Section Two describes the framework in theory and Section Three previews the 5-phase implementation plan. Finally, Section Four reviews the conclusion and additional resources.

### **Recommendations**

All of the framework-specific recommendations for my client are detailed in the *Applying the Learning and Action Alliance Framework: Energy Insecurity in Maricopa County Guidebook*. In the guidebook the *Introduction* covers how to use the guidebook, *Section Two* provides a brief overview of the LAA framework phases in theory, and *Section Three* presents specific examples on how to achieve each phase. One of the key components in the guidebook is Section Three, as it provides tangible examples for implementing an abstract framework.

Before implementing the LAA framework, the facilitator must invest time in reading through LAA literature. The purpose of the guidebook is to simplify the framework process and provide specific examples on how to accomplish each framework phase, however, the guidebook alone will not provide enough context to create a skillful LAA facilitator. To supplement the guide, I included additional resources, including case studies. From a practitioner perspective, facilitators with prior experience



hosting workshops and workgroups may have an easier time implementing concepts in the guidebook.

The skills required to complete those tasks can not be learned exclusively from the Guidebook.

Finally, the workgroup facilitator must be included in the LAA core group. It is crucial that framework implementation is coordinated with the overall project plan. For this project, the framework implementation process did not begin until after the project was initiated. I believe the framework would have been more effective and easier to implement if the two timelines would have been aligned.

My project partner was able to provide me with brief feedback on the guidebook. It was noted that the guidebook was helpful, however, the project partner is looking forward to piloting the guidebook to assess efficiency.

### **Conclusion**

The initial plan for this project was to implement Phases 1-5 of the LAA framework into the energy insecurity workgroup. Then the process, results, and effectiveness would be documented in the accompanying guidebook. Unfortunately, due to various roadblocks, the plan had to be altered. Some of the challenges I encountered in this project was balancing the MSUS timeline with my project partners timeline, prioritizing academic deliverables and deliverables for my client, and managing my time.

After graduation, I will continue working with the Energy Insecurity group to ensure all phases of the framework are complete. I believe that another student could carry on this work by implementing the LAA framework into a different workgroup and adding additional examples or revising the guidebook. If the framework was applied to a different workgroup, it would have more validity as an interdisciplinary framework.

## **Appendix**

### **Appendix A: Additional Resources**

#### **LAA Case Studies**

[http://archive.northsearegion.eu/files/repository/20130415141048\\_WP1LearningandActionAlliances\\_MARE\\_NorthSeaRegionProgramme.pdf](http://archive.northsearegion.eu/files/repository/20130415141048_WP1LearningandActionAlliances_MARE_NorthSeaRegionProgramme.pdf)

<http://www.bluegreencities.ac.uk/research/learning-and-action-alliance.aspx#:~:text=The%20Blue%2DGreen%20Cities%20team,socio%2Dcultural%20and%20economic%20benefits.>

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