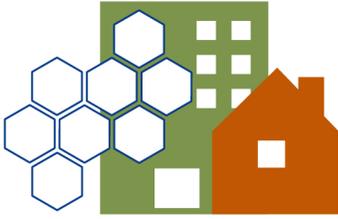




1. System Modeling Introduction

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Contents

Welcome to System Modeling with Stella Modeling!	1
Overview of System Modeling	2
What is System Modeling?	2
Why Would a Community do System Modeling?	3
What Results Can a Community Expect from System Modeling?	4
What is the Process of System Modeling?	4
Who Should Participate in System Modeling? How Do People Participate?	4
Difference between System Modeling and Other Planning Processes	5
System Modeling Scenarios	7
Planning with Equity	7
Steps in the System Modeling Process.....	9
System Modeling Step-by-Step	10



Welcome to System Modeling with Stella Modeling!

Communities are struggling with how to respond to people living in shelters and on the street and other places not meant for human habitation because of a lack of affordable housing and essential supportive services to maintain housing. Many communities find it hard to know what is needed to make a difference – how much more shelter? how much housing? how much and what kind of services? – let alone how to build the public and political will for the investment needed to end homelessness.

To help them develop a plan and build support for making the changes to their existing homeless response system needed to end homelessness, some communities have used a structured, data-informed process called **system modeling**. The process begins with gathering a team of people with experience in homelessness and expertise in the homeless response system who create a data-informed model of an “ideal” system. Such a model projects what types and amounts of assistance would effectively and equitably end homelessness. The community can then use this model to guide its resource investment decisions.

To support a community's system-level planning efforts, HUD developed the **Stella Modeling (Stella M) module**, an online analysis tool that uses the community's data on homelessness, combinations of project types, and performance goals to calculate the inventory of housing, shelter, and services needed to fully meet the community's needs.

This introduction to system modeling provides an overview of the system modeling process and information to help a community decide whether system modeling is the right planning tool for them. System modeling is not a one-size-fits-all approach and will look different in each community. This introduction provides general information and resources. Communities will individualize their approach to planning based on local context and priorities, including who is and is not being served by their homeless response system and what disparities or inequities exist.

The system modeling process starts with understanding how people are currently flowing through the homeless response system. It then uses historical data and the insights of community members, including those most directly affected by homelessness, to make assumptions about what is needed and inform plans to improve the system.

It can feel uncomfortable to make assumptions based on past data and how the system has been operating. But intentionally or not, every time new funding is added or projects are renewed, assumptions are being made about who will use each resource, how long they will use it, and whether it will lead to success and equitable outcomes. **System modeling is a strategic process that leads to more intentional and equitable decision making.** Though the process is informed by data about the current system, a vital component of system modeling is critically examining that current system and



letting go of past assumptions. See [4. Facilitation Guide](#) and [6. Assumptions Guide](#) for further guidance.

System modeling can help communities that have been struggling with the following types of questions:

- Would our homeless response system benefit from a new vision of how to serve people instead of just adding more projects like the ones we already have?
- Are new investments being made into our system without a full understanding of the impact each investment will make?
- Are current planning efforts fully informed by the input of people with lived experience of homelessness?
- Should we add more shelter beds or increase rapid rehousing capacity?
- What level of provider capacity is needed to implement an ideal system?
- How can we reduce unsheltered homelessness in the short term while building out our permanent housing stock over several years?
- How can our system better meet the needs of racial, ethnic, and other groups that are disproportionately affected by homelessness?

These questions, and ones like them, can help a community understand why they might want to engage in system modeling and how the process could improve local planning strategies and their overall homeless response system.

The **System Modeling Toolkit** can support a community each step of the way. Just one of the toolkit's resources and guides, *Introduction to System Modeling* is designed to provide a community with enough initial information to engage in conversations about system modeling and what it could look like locally. It provides all the information needed to strategize and determine whether it is a good time to start a modeling process and to define the goals of the work. Based on the local governance structure, it might be system planners and community leaders who make the decision to start the process of modeling, but as this guide makes clear, effective modeling can be accomplished only with a diverse set of community voices and experiences.

Overview of System Modeling

What is System Modeling?

System modeling is a structured, data-informed process to develop **estimates** of the size and needs of a population of people experiencing homelessness and **assumptions** about the types and amounts of assistance (housing, shelter, services) that would effectively and equitably meet those needs. Often this vision of how existing and new interventions could fully meet households' housing and services needs is called an "ideal" system. The results of system modeling show a community the investments and changes that are needed to implement that ideal system.



Using these estimates and assumptions, Stella M calculates the inventory that is needed to meet the services and housing needs of households experiencing homelessness in the community. This inventory is also called a **model of an ideal system**. If cost estimates of the project types in the ideal system have been developed as a part of the system modeling process, then the model will also include cost estimates by project type and for the whole homeless response system.

Models can be developed for the needs of the entire homeless response system, such as the inventory needed to exit every individual and family to permanent housing, or the needs of a subpopulation such as youth, Veterans, families, or people identified as long-term homeless. System modeling can be used to intentionally address inequities by using data disaggregated by race, ethnicity, gender, age, and disabling condition in the modeling process and incorporating feedback from people directly affected by the homeless response system.

For example, a community that finds higher rates of returns to homelessness for Black households, might explore further using focus groups or interviews to understand how the current system is not meeting the housing needs of this population. Through these efforts, the community discovers that employment discrimination makes it harder for Black households to find steady employment at high enough wages to pay the rent during the usual length of assistance of the housing programs. The community could include longer rent assistance or increased housing stabilization services in their model of an ideal system. These improved services models would reduce disparities in returns to homelessness by better meeting the needs of this population, while also improving outcomes for any household facing similar barriers to housing stability. Note, system modeling is a process to estimate the inventory needs of a population experiencing homelessness, and does not replace the function of matching individual households to the best services to meet their needs, which is the role of coordinated entry.

Why Would a Community do System Modeling?

Communities undertake a system modeling process to develop a set of recommendations for how their homeless response system should be structured, scaled, and resourced to provide interventions that will meet people's immediate safety needs and assist them to find and maintain housing. Once a community has developed a model, they can work on a transition plan to invest resources and system change efforts to move from their current system to the types and scale of interventions recommended by the model.

System modeling can also serve a more limited purpose such as determining which investment of new resources will have the greatest impact on the existing system.



What Results Can a Community Expect from System Modeling?

Regardless of a community's goals in the system modeling process, they can expect to have the following end products:

- **A set of recommended project types**, including for each project type a description of its target population, services to be offered, length of stay, and anticipated outcomes. A community can use this information in written standards, Requests for Proposals, and contracting for new projects or expanding existing ones.
- **A recommendation for the number of units of each project type** for each year in the model, also called an "inventory recommendation," to guide the transition from the current system to the ideal system. A community can use this recommendation to seek out new resources (advocacy, grant applications, etc.), guide their allocation, or reallocate existing resources.
- **An overview of the performance of the housing and services interventions** for both new and existing projects needed to achieve an ideal system.

Depending on a community's process, the end products also might include:

- System recommendations to address racial and other disparities.
- Operating cost projections by year and project type.
- A gaps analysis.
- An implementation plan.

What is the Process of System Modeling?

System modeling is more than just plugging numbers into a tool to calculate inventory recommendations. It is a process that starts with engaging key partners and forming a workgroup, identifying a facilitator, and determining a decision-making and accountability structure. The workgroup will use quantitative and qualitative data and on-the-ground expertise to develop the project types and estimate the needs of people experiencing homelessness. Doing that can take several months and has been successful in several communities through in-person or remote workgroups. The "[Steps in the System Modeling Process](#)" section of this guide provides an outline.

Who Should Participate in System Modeling? How Do People Participate?

Participants in system modeling should be a broad and diverse cross-section of person with expertise in the homeless response system, including people experiencing homelessness, providers, funders, advocates, other organizations serving the populations, and others. Organizing them into groups can help structure their involvement.



A community might end up naming their groups differently, but here are the main three groups of people to consider when planning a system modeling process. Each group could be a pre-existing group leveraged for this purpose, or a new group established specifically for system modeling.

- Planning Group:** These are the people determining the purpose, goals, and scope of the system modeling process. Tasks could include identifying key partners to include in the workgroup, determining timeline and scope of the system modeling, and selecting a facilitator.
- Workgroup:** This team collaborates to develop the estimates, assumptions, and other inputs for the system model. Depending on the scope of the system modeling process, there may be more than one workgroup (e.g., one workgroup planning for individuals experiencing homelessness and one workgroup planning for families experiencing homelessness).
- Leadership Group:** These people are the audience of the system modeling results and recommendations. They are in positions to influence policies and funding decisions for the homeless response system. This could be as simple as the Continuum of Care Board, or it could also include elected officials, funders, agency directors, and other leaders.

See [3. System Modeling Roles and Responsibilities Guide](#) for more information on how to structure these groups and define roles, responsibilities, and decision-making processes. See [2. Identifying and Engaging with Key Partners Guide](#) for more information on determining who should be included in each group.

Difference between System Modeling and Other Planning Processes

Depending on their planning needs, a community can pick from several different planning approaches, of which system modeling is just one. Communities also can combine multiple processes to enhance their homeless response system.

Planning Process	What Questions Does It Answer	How Is It Different from System Modeling?
Asset Mapping		
Asset mapping is catalog existing services, benefits, and resources within the community, such as individuals' skill sets, organizational resources, physical space, institutions, associations, and elements of the local economy. See Section 1: Asset Mapping [guide from UCLA Center for Health Policy Research] for more information.	What are the community's assets and strengths? What are the unmet needs, as we design or redesign a project? How do we best organize community partners around an issue?	Asset mapping does not produce a recommendation about inventory and performance to meet the needs of households experiencing homelessness in a community. It can be helpful if done before system modeling to inform the development of projects and assumptions.



Planning Process	What Questions Does It Answer	How Is It Different from System Modeling?
Coordinated Investment Planning		
<p>In coordinated investment planning, several funders with a common geography assess the housing and services needs in a community and develop strategies for investing their resources as efficiently and effectively as possible.</p> <p>See Rehousing and Coordinated Investment Planning Tool [HUD Exchange resource] for more information.</p>	<p>What investment most efficiently targets a specific goal in the near future?</p>	<p>Coordinated investment planning is similar to system modeling but might not plan for the full needs of all households experiencing homelessness. Coordinated investment planning focuses more on how funds can be coordinated to improve the homeless response system.</p>
Process Mapping		
<p>Process mapping is a technique used to map out workflows and steps in a process, entities responsible for carrying out each step, and decision points in a process. It involves creating a <i>process map</i>, sometimes referred to as a <i>flowchart</i> or <i>workflow diagram</i>. The purpose of process mapping is to communicate how a process works in a concise and straightforward way. It can be used to target parts of a process for improvements.</p> <p>See Improving Performance with Process Mapping [HUD Exchange resource] for more information</p>	<p>How do we make processes, such as referral to a housing resource, more efficient?</p>	<p>Process mapping is focused on the operation of the system currently, not planning for future needs of households experiencing homelessness. It can be used to help a system reach its performance goals once system modeling has been completed.</p>
Power Mapping		
<p>Power mapping is a visual technique used to identify who has power in the community, whom you need to influence, how to influence them, and who can do the influencing, in order to reach a specific goal; and who needs to be empowered so decisions are more equitable and informed.</p>	<p>Who are some key potential allies in your community that can influence others?</p> <p>Who might oppose your plan, and who is in the middle and could be brought over to your side?</p>	<p>Power mapping focuses on understanding who has power or authority in the community to implement a plan but not on how to develop a plan. It can be used to help a system develop support and buy-in for the plan once system modeling has been completed.</p>
Strategic Planning		
<p>Strategic planning is an organization's or system's process of defining its vision and developing goals and strategies to achieve the vision. The strategies might include improving operations, investment or reallocation of resources, and relationship building with partners.</p>	<p>What is our vision or goal for our system?</p> <p>What actions must we take to achieve that vision or goal?</p>	<p>Strategic planning usually includes a broader range of strategies for changing a system to achieve a goal. Once system modeling has been conducted, a strategic plan can incorporate the inventory and performance recommendations into a broader implementation plan with strategies for securing new resources and transforming the system in alignment with the model.</p>



System Modeling Scenarios

A community might choose to undertake system modeling for many reasons. Below are a few of the most common scenarios addressed throughout the System Modeling Toolkit:

- **System Redesign:** The current homeless response system is inadequate. People become homeless, remain homeless, or return to homelessness at unacceptably high rates. System modeling can help quantify the resource gaps and set system-level and project-level performance targets to create an ideal system.
- **Reduce Disparities:** The community have identified disparities in rates of homelessness or in how well their homeless response system meets the needs of populations disproportionately affected by homelessness or inadequately served by the system. System modeling can identify inventory gaps and areas for project and system changes to improve outcomes for such populations.
- **Strategic Funding:** Additional funding is available, and the community wants to be strategic about resource allocation. System modeling can help identify and define effective project types to meet the needs of the population being served and identify inventory gaps to guide funding decisions.
- **Performance Improvement:** Even if a community is not looking to completely redesign their homeless response system, or they do not have additional funds available, they might want to use system modeling steps and tools to test out (to “model”) how small or large changes might affect the system. They can forecast the impact of reducing length of stay in projects, increasing exits to permanent housing, or decreasing returns to homelessness, for example. They can consider how shifting resources from one project type to another might affect overall system outcomes.

Planning with Equity

A commitment to equity, including racial equity, must be integrated into the entire system modeling process. Nationally, Black, Hispanic/Latin(a)(o)(x), and Indigenous people become and remain homeless at rates disproportionate to their share of the overall population. LGBTQA+ communities, persons with disabilities, and immigrants are also disproportionately affected by homelessness. Additional groups may also need to be considered based on local context. The planning group should ensure that these groups are represented in the system modeling process. An ideal system must incorporate investments and strategies to end this disparity.

The first step in creating change is to normalize the conversation on racial equity. To talk openly and honestly about racial equity starts with achieving a shared understanding of key concepts among collaborators. A racial equity framework sees racism as both individual and institutional, both explicit and implicit. Once everyone shares those



understandings, the group can address equity as a top priority by setting goals, making a plan, and holding one another accountable.

To plan with equity requires diverse leadership and diverse workgroup membership, an equity analysis component, and incorporating qualitative data from focus groups and interviews. The benefit of good planning is that it can help a community to ensure that everyone who needs to access the homeless response system can access it in an equitable way – regardless of race, ethnicity, gender identity, disabling condition, age, household type, etc.

It is up to each community to decide what form their equity planning should take. Options include these:

- An action plan dedicated to multicultural access and equity.
- Making multicultural access and equity a feature of a broader diversity strategy. Such a strategy might include other diversity initiatives such as establishing partnerships with members of populations disproportionately affected by homelessness, including but not limited to Black, Indigenous, and other people of color; people with lived experience of homelessness; people who identify as lesbian, gay, bisexual, transgender, queer, intersex, asexual, and more (LGBTQIA+); or people with a disabling condition.
- Incorporating multicultural access and equity actions into existing organizational plans and cascading to community-wide planning.

Through system modeling, communities will use a data-informed process to identify gaps and inequities in their current system and design a system that would better meet the needs of groups disproportionately affected by homelessness, including considering adding new project types to the homeless response system that will meet people's needs for permanent housing. Planning with equity also will involve looking beyond Homeless Management Information System (HMIS) data and consider the needs of households that have not accessed services. Additionally, qualitative data can help a community understand people's experiences and provide valuable insight into what types of programs and services will better meet their needs. See [5. Data Guide](#) for more information.

These resources can help a community incorporate racial equity into their planning:

- [Equity-Based Decision Making](#) [website]
- [Dismantling Racism Works Web Workbook](#) [website]
- [Racial Equity Impact Assessment](#) [information sheet]
- [Racial Equity Action Plans: A How-to Manual](#) [publication]



Steps in the System Modeling Process

The System Modeling Toolkit provides planning resources to lead communities through the system modeling process, including the use of the Stella Modeling (Stella M) module. The “[Step-by-Step](#)” section below identifies the various components in that process including assembling key partners, using data to develop modeling assumptions, and using Stella M to generate inventory and performance recommendations. System modeling is iterative: the planning group and workgroup might review initial results of the modeling and adjust assumptions several times before the model is final.

To get started the planning group needs to consider several factors as they establish the plan for the modeling process and the implementation of the model:

- The goal for the modeling process; for example, modeling for the entire homeless response system vs. exploring the use of a new resource.
- The extent of the model; for example, for a specific subpopulation such as youth and young adult households vs. all households experiencing homelessness.
- Whether other system modeling (for example, for youth through HUD's Youth Homelessness Demonstration Program) already has been conducted in the community, and how the current modeling will incorporate previous models.
- How to organize the modeling process, including the number of workgroups, the timeline, and staffing for various roles.

A community's transition from their current homeless response system to the new model developed through system modeling should begin during its planning step. Designing the process so there is broad buy-in for the final model is essential for securing political support, new resources, and willingness to change the existing system. Critical considerations include:

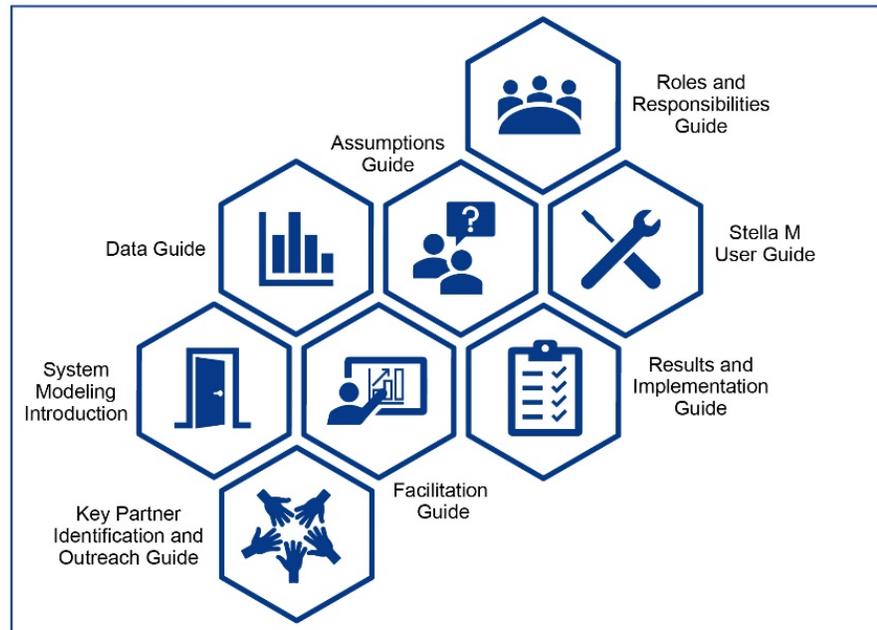
- How the planning group engage champions during modeling, so they are prepared to lead implementation
- What is needed in the final plan to build broader support for the model recommendations and to lay the groundwork for securing new funding
- How to create the foundation for changing the system and programs to achieve the housing, shelter, and services supports recommended in the model?



System Modeling Step-by-Step

The steps in the system modeling process described below are an overview to help communities thinking about conducting system modeling understand the scope of the process and to see the different resources available to support the process. A more detailed description of the process is available in the [4. Facilitation Guide](#).

1. Once the community decides to conduct system modeling, it forms a planning group. Their initial tasks are to develop a system modeling project plan and identify key partners to participate in the process. See [2. Identifying and Engaging with Key Partners Guide](#).



They may also

identify a facilitator to guide the workgroup. See [4. Facilitation Guide](#) for information on selecting a facilitator.

2. The facilitator orients the workgroup to the system modeling process, including defining and documenting how system modeling decisions will be made. See [3. Roles and Responsibilities Guide](#) and [4. Facilitation Guide](#).
3. Once the workgroup structure is in place, the facilitator leads the group through the system modeling process. The group's work is informed by available data and guided by the core values and purpose they develop for the modeling process. From that foundation, the workgroup develops estimates, assumptions, and other inputs that will be used to generate the model. See [5. Data Guide](#) and [6. Assumptions Guide](#).
4. The assumptions and other inputs are entered into Stella Modeling (Stella M) to produce estimates of the quantities and types of inventory needed to meet the community's goals. See [7. Stella M User Guide](#).
5. The workgroup and other partners review the draft model. They collect feedback and finalize the model.
6. They develop an implementation plan and a strategy for communicating system changes and improvements based on the model. See [8. Results and Implementation Guide](#).