

Solving San Francisco's Housing Polycrisis

At SPUR, MIT's Kent Larson and City Science SF's Peter Hirshberg argued that the city's next housing breakthrough will come not from zoning alone, but from combining simulation, design innovation and a more constructive form of public debate.

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[00:00] San Francisco's Moment. San Francisco may be famous for inventing the future, but it has been surprisingly slow to apply its inventive powers to the city itself. MIT's City Science network now has urban laboratories across Asia, Europe, Latin America and the Middle East, yet none in the United States beyond Cambridge. At SPUR earlier this year, Kent Larson and Peter Hirshberg made the case that San Francisco—with its extraordinary technical talent, acute urban problems and appetite for experimentation—is the obvious place to change that.

[01:01] Modeling the Whole City. Their premise is simple: cities should be able to test consequential decisions before they build them. City Science combines data, physical models, artificial intelligence and agent-based simulations to show how people might live, work, shop, travel and meet under different plans. The aim is not merely to optimize one variable, such as traffic or carbon. It is to see the neighborhood as a whole—its social life, economy, environment and access to everyday amenities—and understand how a change in one part affects the rest.

[10:41] Urban Rehearsal. Hirshberg called these models a kind of “digital crash dummy” for the city. Larson offered an even more evocative phrase: urban rehearsal. Before committing millions of dollars and years of political capital, residents and officials can move pieces, compare alternatives and watch the consequences unfold. The model does not dictate the answer. Its real value is that it creates a common object around which people can disagree more intelligently.

[12:34] From Conflict to Inquiry. That approach became especially relevant during San Francisco's Family Zoning debate. Public arguments about height and density were often driven by exaggerated renderings—visions of familiar streets overwhelmed by giant, boxlike buildings. City Science SF and its collaborators instead explored how zoning changes might actually appear over time, parcel by parcel, taking economic feasibility into account. At a “city science fair” at the Internet Archive, residents encountered several competing models and could question their makers directly. The atmosphere shifted from a familiar public-meeting standoff to something closer to collective inquiry.

[20:09] Zoning Is Only the Beginning. But passing Family Zoning only answered where more housing may be built; it did not ensure that anything would be built. Larson described a housing “polycrisis” of scarce land, high construction costs, slow approvals and well-intended mandates that can collectively make projects infeasible. One promising response is the single-stair building. Current rules often require two stairways and a long corridor, forcing small projects into bulky, expensive forms. Allowing carefully designed single-stair buildings up to roughly six stories could make thousands of narrow 25-by-100-foot lots usable while producing the human-scale housing found in many beloved European and older American neighborhoods.

[27:44] Housing as a System. The building itself could also become a repeatable system rather than a one-off prototype. Larson described a “chassis and infill” approach: efficiently constructed shells fitted with prefabricated bathrooms, kitchens, storage and furniture. Parametric software could adapt a proven design to different lots while checking code compliance at the same time. Hirshberg pointed to the larger prize: if designs are pre-approved, permitting can move from years toward something much closer to automatic—without sacrificing safety or architectural variety.

[28:30] Living Large in Less Space. Small apartments need not feel small. MIT’s transformable interiors—beds that descend from the ceiling, offices and closets that appear on demand—are already operating in buildings around the world. Combined with faster construction, lower soft costs and streamlined approvals, the team’s preliminary financial model suggested that projects failing today could become viable. The same imagination can be applied downtown: instead of abandoning office towers with deep, dark floor plates, housing could wrap their bright perimeter while the core remains workspace, cultural space or shared amenities—a vertical neighborhood rather than a conventional conversion.

[34:42] Beyond Static Zoning. The most radical idea reaches beyond zoning as a fixed rulebook. Traditional incentives are static: a city offers a bonus for a plaza, for example, and soon gets too many plazas, including ones nobody needs. Larson proposed a dynamic system in which incentives change as neighborhood needs change. A community might first reward a grocery store, then a playground, then affordable housing or a public gathering place. Each completed project would update the system, with data informing the choices and elected officials still responsible for judgment and unintended consequences.

[42:47–46:25] The City’s Next Building Agenda. The panel discussion brought the vision back to the immediate work of government. Rachael Tanner, San Francisco’s director of citywide planning, said zoning creates the permission to build but does not touch all the other levers that determine whether housing gets produced. The city’s next agenda naturally includes single-stair reform, pre-approved plans, modular construction, mass timber and other building technologies. But those ideas must be developed with the engineers and code officials responsible for seismic and life safety—and tested against a practical question: do added safeguards preserve the cost and space savings that made an innovation attractive? Tanner also noted that recent reforms have already reduced median planning approval to 117 days and building permits to 162 days, even before more advanced technology is introduced.

[48:00] No Single Silver Bullet. Erika McLitus, SPUR’s housing and planning policy manager, offered a complementary warning: no model can erase every constraint. Tariffs, material prices and labor shortages often sit outside a city’s control, while state building rules can help or hinder local experimentation. A temporary freeze on code changes, for example, makes a complicated system easier to manage but can also prevent cities from adopting single-stair reforms or advancing greener and more seismically resilient buildings. SPUR’s task, she said, is to support the changes within public control while seeking affordable, abundant and accessible housing through a portfolio of solutions—not a single policy that overlooks part of the problem.

[50:26] Taking Cost Out. Hirshberg identified a neglected theme in the national housing conversation: taking cost out of the product itself. Much housing policy concentrates on subsidies, financing or density. Those matter, but they do not substitute for redesigning the process—from approvals and codes to components and construction. A credible model can make those levers visible. It will not eliminate political disagreement, but it can give the city a shared set of assumptions to test and a clearer list of priorities to pursue.

[52:06–56:20] Making Tradeoffs Visible. Tanner then posed the harder political question. San Francisco’s public debates often ask people to stake out a position and defend it until they win or lose; leaders, agencies, unions and neighborhoods arrive with interests that data alone will not dissolve. Could simulation create enough space for an honest discussion of tradeoffs? She was hopeful but not naïve. Even when people disagree about the choice, she said, a trusted model could at least ground them in the same facts and make clear what each alternative gives up.

[54:25] Consensus by Design. Larson answered with workshops MIT conducted in Hamburg as the city sought sites for refugee housing. Around a shared model, small groups had to contribute proposals, examine evidence and respond to competing ideas with alternatives of their own. The format diminished the power of the loudest voice and elevated people willing to solve the problem together. The model worked partly because participants trusted its neutral conveners—a reminder that civic technology is only as credible as the institution and process around it.

[57:25] A More Constructive Civic Culture. McLitus closed the circle by focusing on how people speak to one another. Policy organizations can become trapped talking to their familiar audiences, she said, while public meetings reward combat. In SPUR workshops, residents learned that public comment is not about humiliating an opponent or proving them ignorant; it is about sharing lived experience and expertise, listening for legitimate concerns and perhaps changing a mind. That may be the talk’s most important proposition for San Francisco: better models can help the city see the future, but realizing it will also require a more curious and constructive civic culture.