

Maine’s housing production goal, of building more than 80,000 housing units by 2030, represents an enormous increase in construction. The need is so large that **bold process changes are needed to meet it**, which in turn requires public/private collaboration to safely make those changes. The establishment of Maine’s Office of Community Affairs promises a moment-in-time to achieve that collaboration.

Maine struggles to build a few thousand homes a year – of which ~1000 homes are affordable. Therefore, as a starting point, we wondered if changes in construction methods could improve affordability of newly constructed housing in Maine? Might that in turn prompt private-market, lower-cost, housing to be built and at the same time help stretch scarce subsidies further for the lowest income households? **Might greater adoption of new(er) construction technology bridge the gap between construction costs and what most Maine households can afford?**

Executive Summary: The answer is a qualified “yes”. Newer methods can reduce costs to an extent. However, there are many barriers. Construction technology alone, will not completely solve the problem. New(er) technology is an important tool in the tool kit and it is worth addressing the remaining barriers to broaden adoption.

Uninsulated exterior wall panels are widely used, and therefore no additional cost savings is likely.

Insulated panels, where framing inspection is done at the factory by Maine-licensed Third-Party Inspectors (TPI), does have room for additional adoption and therefore cost savings. The largest hurdle to broader adoption is industry knowledge – for example greater training around the nexus of factory TPI, local code enforcement officers (CEO) and reliance (and costs) for structural engineers’ on-site support. Both cost savings and reducing barriers to broader adoption are possible should MOCA engage in training and coordination between state and local building officials.

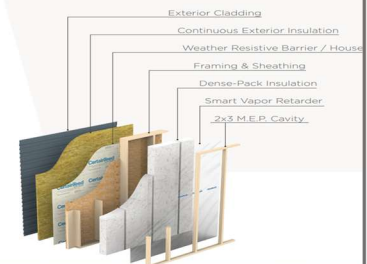
Modular components have the most promise and the most barriers. Depending on whether the state is able to reach a higher level of standardization, Maine could see cost savings of 10-35% of total costs from the greater utilization of modular. Barriers are extensive, including the same code-enforcement issues as insulated-panel construction; double sales tax is charged on modular units and the licensing requirements have

Factory Components:

Exterior wall panels
(framing, moisture barrier and sheathing)



Insulated Panels:
(exterior panel + interior insulation and chase for mechanicals) framing inspection done in the factory



Modular components



not coordinated with training programs resulting in lack of human capacity. Overall, there is a lack of industry knowledge about the opportunity of factory-built components and a related substantial inertia.

The analysis, opinions and views expressed herein are solely those of the author and do not necessarily reflect those of MAHC or its members.

Details:

Below are three sets of factors to consider based on Fall 2024 interviews of Maine General Contractors; Manufacturers of Panels/Modular; Developers; Industry groups; State Standards/Licensing Board and Architects/Designers:

1. **Root Causes:** A refresher on “why is building lower-cost, affordable, housing so challenging?”
2. **Current status** of newer construction technologies such as panelized construction and modular and what are the pros and cons of each?
3. **What can be done:** what can Maine do to improve the odds of higher adoption rates, in order to encourage lower-total-construction-costs and thereby start to move towards the housing production goals outlined by HR&A under LD2003?

Root Causes: Why is it so hard to build lower-cost (aka affordable) new homes?

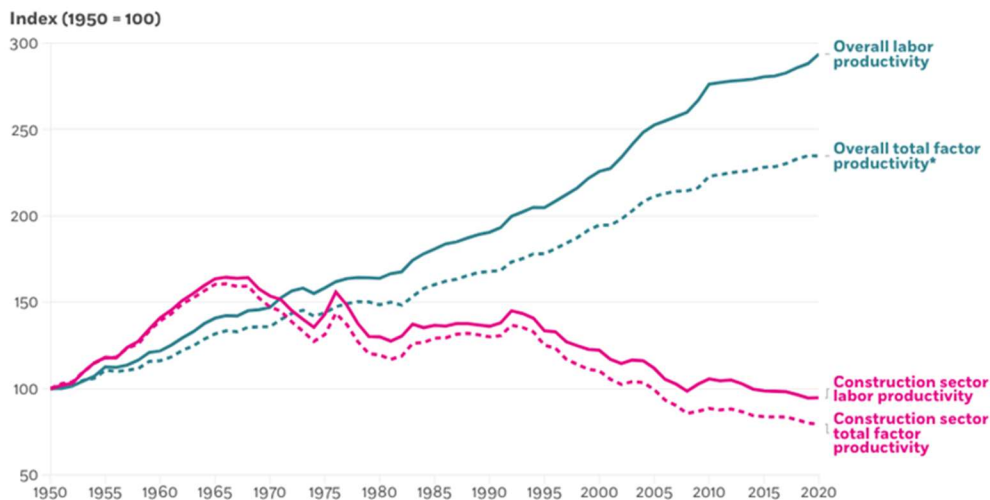
Housing construction is a complex ecosystem. There are dozens of organizations (public and private) that impact the construction of a single home. Each of these entities can have a different funding source and business model. Changing incentives is extremely challenging and requires intense collaboration. For example:

- **Each new development is its own virtual company**, formed for a period of time to complete the work and share the risks. Often a singular LLC is set up for a single address. This could be thought of as a “**coordination tax**” and it is very high.
- There are **24 subcontractors**, on average, per new single-family home and it takes about 1 year to build. Multi-family has an even higher number of “subs” and takes closer to **2 years of construction after 3-5 years of permitting/approvals**. Permitting takes much longer than construction (source NAHB).
- The proliferation of requirements has resulted in **extreme specialization** – both in the number of “subs” – and even within a “sub” (e.g. drywall or flooring may have 3 different teams of specialists). The **time lost from coordinating schedules is another example of a high coordination tax**.
- The ecosystem extends well beyond what most would think of as a construction worker – from surveying and engineering, title work, legal and accounting, distributors, transportation, earthwork – to repairing heavy equipment. **Construction has a high jobs multiplier**. Meaning that for every 1 construction job, nearly 4 other jobs are created and need to be filled. Increasing labor capacity is extremely challenging at all levels.

- **Lack of capacity is endemic. There are shortages in number of companies who will bid** – as well as number of workers at each of those companies. **Our educational system tends to focus on skills training (i.e. preparing someone to be an employee) not on creating new companies.**
- “A”affordable developers who build for low and extremely-low-income residents have become creative, often finding 10 or more layers of financing to support a project. This **highly complex capital stack also adds costs.** One developer suggested that they have to hire “one full-time office worker per project, just to handle the reporting and compliance requirements”.

Given all this, not surprisingly, nationally **construction productivity has plummeted** over many decades (source McKinsey) and **Maine’s construction productivity is 14% below the national average** (source 6/2023 Maine DECD construction industry profile)

Productivity in the US economy and the construction sector, by type



*TFP = combined capital productivity and labor productivity

Goolsbee and Syverson, 2023



By some measures – as much as 40.6% of total development costs are from increased regulatory burdens over time (source: NAHB’s small, national, survey). To validate this nationwide study, for relevance in Maine, is not so easily done. However, Maine’s soft costs are typically thought of as ~20-30% of total costs and many soft costs are to meet regulatory requirements of some sort. Hard costs also have regulatory costs like OSHA. Directionally, this national data seems roughly correct for Maine and is a large component of total construction costs, thereby lowering the number of units that can be built at an “affordable level”.

These challenges are not unique to Maine. However, what is additionally challenging for Maine is both the age of her workforce, and the small size of households. Maine overall has a high percentage of 1 person households (medium blue on map to the right) at 29-31.2% of households (vs. national average of 27.6%).

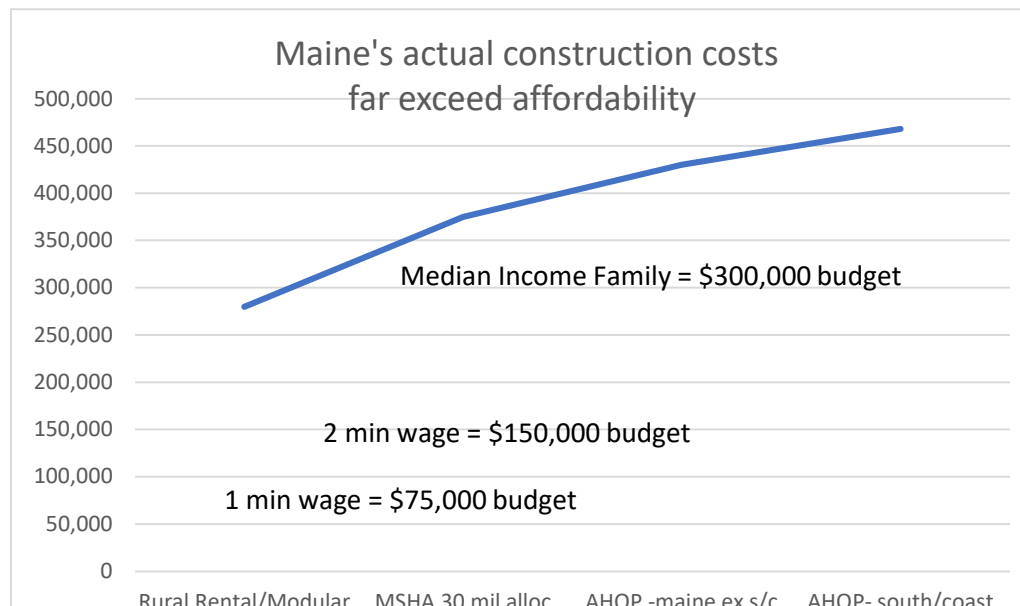
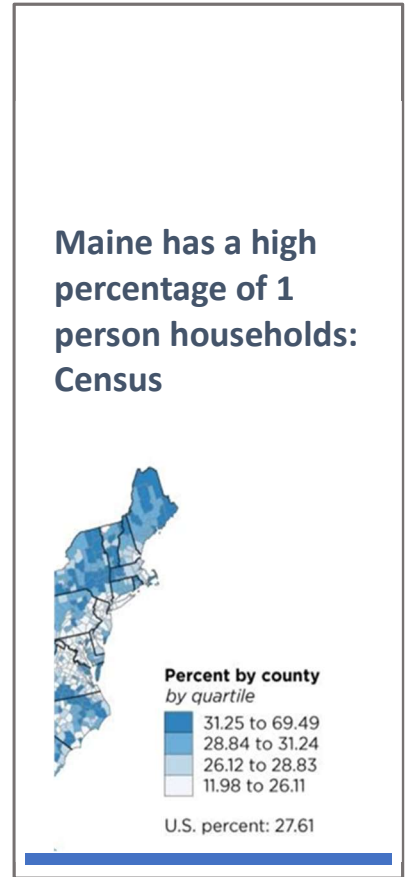
Somewhat surprisingly, the most urban areas of Maine do not have the highest rate of small household size. The Dark Blue areas are more rural parts of Maine where 31-70% of all households are 1 person households. According to the Production Goals Report, many of the areas in Maine that need the highest % increase in new housing construction, live in regions with a very high percentage of 1 person households.

It is extremely challenging from both a construction-cost, and “affordability” perspective, to house a single-person household.

For example, using a number of assumptions, my ballpark estimate of “affordable construction cost” is relating income to a theoretical new construction budget. A **single full time minimum wage worker has a construction budget of roughly \$75,000. Compared to an average construction cost of a basic apartment at roughly \$375,000 – or 5x what a full-time minimum wage worker could afford.** Even the median income HH cannot afford the average construction cost of a new basic rental or SF home (\$280-300k is what is affordable vs. \$375-468k construction costs). Worth noting the average salary of a Maine construction worker in 2022 (\$64,244) is below the Maine median HH income of \$75,160.

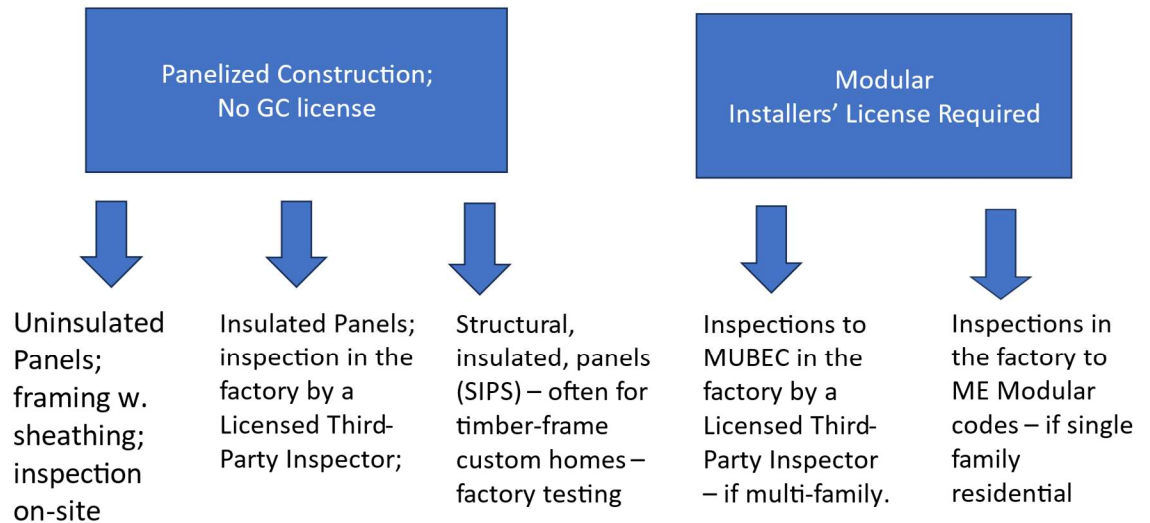
Meaning that a construction worker, on average, cannot afford the housing they are building.

Actual construction costs vary; however, they are consistently 1.5-5x what is affordable.



2. Will greater adoption of construction technology help bridge the cost: affordability gap?

Can construction technology solve the problem?
Defined terms and key differences



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Uninsulated panels, including ones that have exterior foam-core or zip-panel construction, are widely used. Which means that any cost savings is already baked-in. These types of exterior framing + sheathing + moisture-barriers are widely available and do not change the code-enforcement inspection process, vs. insulated-wall-panels and modular which both have licensing and code-enforcement challenges.

There is more room for adoption of insulated panels, but there are also more barriers. Modular construction for multi-family is the least utilized technology, it is growing with rural rental projects and others – and some of the barriers faced overlap with those of insulated-panels.

Can greater adoption of factory technology improve affordability?

Type and utilization

• **Uninsulated panels** (framing + sheathing)
– widely used but doesn't save much as it's only partially replacing 1 specialty (framing)

• **Insulated Panels** -> savings 15+/-% of total costs (source: CertainTeed); Category often used; opportunity exists for expansion to other projects and uses (floors/walls/ceilings)

• **Modular** → 10-35% +/- of total savings from faster = lower development/soft cost + faster occupancy (Harvard JCHS); not widely used; rural rental projects just starting to utilize for multi-family

Opportunity to “bend the cost curve”

• Widely used and savings already built in.

• Opportunity exists to extend already wide-spread usage – industry knowledge is erratic

• Greatest opportunity – especially if Maine could achieve some level of standardization

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Key barriers are code-enforcement and licensing processes.

Modular construction requires an extra level of licensing from the Manufactured Housing Board (MHB) with currently no training “feeder” program to create more licensed-installers. There is also no way a large general contractor can become licensed “as a company” for modular installation. The largest GC companies in Maine would likely want their licensing secure, prior to bidding on a project, without worrying about employee turnover. Creating a path for corporate licensure is critically important in my view. There are also 2 layers of sales tax charged on modular – once on the materials used (just like site-built) and then another layer of sales tax charged when the modular-component is delivered.

Inspections and code enforcement is also an issue. The nexus between Maine-licensed-third-party-inspections (TPI) in the factory, structural engineer oversight and local code enforcement officer (CEO) inspections needs coordination, codification, simplification and training. There have been instances where the builder pays for duplicate inspections: factory-inspection and local inspection as the town is unwilling to accept a licensed TPI's oversight. Other times the builder must include a significant cost for the structural engineer to be present on site, helping coordinate local CEO inspections. And others where the town requires “their own” TPI (third party inspector in the factory – being unwilling to accept the licensure of any TPI in Maine). This complex code-enforcement dance, while well intentioned, adds to costs and risks – and is a barrier.

The pros outweigh the cons for greater adoptions of both insulated-panels and modular, however, industry practices are slow to evolve. The cost savings potential for modular components is much higher,

however, so are the barriers.

Insulated-Panels Pros/Cons vs Sitebuilt:

Pros:

- **Faster = more certainty; less risk; lower costs**
- **Savings vary (up to 15% depending on materials/job specs - mainly from lower carrying costs** interest, taxes, insurance, mngmt overhead, onsite-services), source; CertainTeed
- **Eliminates coordination of additional subs** (framing/insulation)
- **Reduced seasonality**
- Quicker to weather-tight = **increased safety** for labor/location
- **TPI:** Framing inspection in the factory
- **Fewer labor-hours** -> circumnavigating the building exterior by 1-2 times less, with a process that is relatively similar to site -built

Cons:

- **Familiarity and Legacy Industry Practices**
- **More time up front** getting specs right
- **Accuracy essentiality:** Engineering and manufacturing – have to be spot on; energy loss btw panels if not installed properly
- **Transportation** risks – damage during transit
- **Logistics** – JIT delivery; crane and space for materials delivery
- Lack of local **CEO knowledge of TPI**
- **Changes in cash flow timing**

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Modular Process – Pros/Cons vs. Site-built

Pros:

- **Quality and performance in controlled environment** (e.g. optimally timed factory processes result in higher energy performance achieving sub 1 ACH blower door testing; more certainty of construction quality)
- **Faster**
- **Less seasonality** - albeit timing of large number of boxes installed onsite has a learning curve
- **Better utilization of Maine's workforce**
- **10-35% total project savings:**
 - **Volume buying**
 - **Faster occupancy**
 - **More ergonomic construction**
 - **Faster = Less carrying costs** (interest, taxes, Insurance, management oversight, dumpster/porta-potty/security fencing/run-off control/Temporary power)
- **Less waste** hitting land-fills
- **Code-inspections happen in the factory**

Cons:

- **Lack of industry knowledge and competition**
- **Design;** designs that are optimized for modular, have higher cost savings. More time spent upfront on specs
- **Site work may be high cost on a more-limited scope of work** (subs may charge just as much as if they were doing the work on site – hence the need for micro-licensing)
- **Incentives vs. Perceptions of risk** - will the time savings be obtained for a process that is less familiar? Will the components arrive damaged? Fear is higher with lack of familiarity. Lack of incentives to use new technology vs. pain of cost-overruns should time savings not occur
- **Site layout considerations** .
- **Learning curve on timing of transit/install** to get to weather-tight and avoid rework
- **Modular-installation-licensing required**
- **Lack of familiarity by local code-enforcement**
- **Sales Tax charged twice; Changes in cash flow timing from deposits**

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What can be done?

All types of construction:

What barriers can be removed: all types of construction

- **Broad Solutions:**
 - Spend the equivalent of 5 units of subsidies (5x121K = \$605K) to improve the industry
 - Streamline codify, coordinate and train – for Codes; code-enforcement and Licensure (consolidating housing-related departments under MOCA ->Mubec/Fire/MHB/Engineering/RE Appraisals)
 - Invest in training to increase capacity
- **Specific Solutions:**
 - **Codify the building codes** and put the “uniformity” back in the uniform building codes (MUBEC) through version control and an appeals board mechanism
 - Through an RFP process, **establish a repeatable floorplan** that could be the basis of a **state-wide, modular, contract**; garnering volume pricing and expedited reviews. Such units could be combined in different combinations with different exterior aesthetics.
 - **Update and complete the snow load tables** (large part of Maine is missing data or old data)
 - **Clear the student-wait-lists** for essential trades
 - **Re-examine road/parking requirements**

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Snow load tables are but one example of the need for greater public/private coordination. Below is the map of the state. The areas in white have no snow-load data and are considered “case studies”, meaning extra engineering costs occur because each builder has to hire an engineer to do the assessment. Completing and updating the snow load tables would help the industry. Developers of the rural rental project in Madison, suggested that had they been able to use the neighboring counties’ snowload table, they would have saved \$100,000 on roof costs across 2 buildings and 18 units.



Another challenge with snowload tables (or the lack thereof) is that local codes often require a certain roof pitch obstensibly for snow load safety. That single code, however, effectively prevents more affordable types of housing. Manufactured (mobile) homes and lower-pitched modular roofs (those with a low enough pitch to be shipped completed) generally are effectively prohibited by low roof pitch local codes. Constructing secondary roofs over manufactured housing, or higher pitched modular roofs which have to either be hinged roofs from the factory or completely built on site - all require extra site work, adding to costs and reducing affordability. The extra costs, of meeting these local codes, lowers access to affordable housing.

Small Homes:

What barriers can be removed: small home construction

- **Challenges:** 1 person households are highly prevalent - especially in counties that need the greatest increases in construction. And yet, the private market can not build small homes at an affordable cost
- **Solutions:**
 - **Move MHB to MOCA** -> efficiency in small home construction exists from manufactured/modular construction; see modular list including funding for MHB
 - **Reexamine energy codes for small homes.** A <1000 square foot house is already much more energy efficient than the median single-family home at 2200+ square feet. Perhaps changing climate impact requirements on small homes to help bridge the affordability gap.
 - **Ask the RE board of appraisers to study valuation methodologies** for small homes. For example, change the order of process to look for small home comps in all of Maine, and then adjust for local conditions. "We don't build small, 2bed/1bath, because bank appraisals won't value them for the cost of construction" (source Patco)
 - Create a **state-wide contract for modular homes – with volume pricing and expedited reviews**

Panelized Construction

What barriers can be removed: panelized construction

- Evaluate and train to improve industry practices, especially around **code enforcement and inspections for factory-built components**
- **Lack of understanding of code-enforcement nexus** between:
 - Structural Engineers (how many times are they paid (by the end household ultimately) to show up -> adding to construction costs);
 - Third- Party Inspections in the Factory, and
 - Local code enforcement. Duplicate inspection fees are reported. Extra time in plan review occasionally; Sometimes towns have wanted “their own TPI” in the plant adding to costs/time/oversight
- **Increase industry familiarity** through licensing standards and training (from engineering thru subs)

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Modular Construction

What barriers can be removed: modular construction

- **Move MHB to MOCA**
- **Suspend the finished-goods sales tax** (2nd layer of sales tax) on modular manufactured in Maine. Just like site -built, sales tax is paid on materials. And then there is a 2nd layer of sales tax collected upon delivery. Remove this second layer which could be especially important for market-based construction
- **Fund new positions at MHB and provide training \$**to create
 - (1) **training programs for licensure;**
 - (2) **corporate license** (only individuals are licensed – not the company) and
 - (3) **Consider developing a super-installer license that would include limited licensure to connect the home** (limited plumbing and electrical licensing) allowing costsavings via vertical integration
- **Clarify nexus** of state/local code enforcement and TPI in factory
- **Create a state-wide design & contract for volume pricing of modular housing**

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Why should MHB (manufactured housing board) shift to MOCA

(Maine office of community affairs)?

- **MHB represents the most affordable**, new housing construction available
- **Coordination is needed** between State Standards and Local Code Enforcement (CEOS)
 - Modular follows MUBEC, just like site-built, and yet has a different inspection cadence with ME-licensed Third-Party-Inspectors (TPI).
 - Local CEO knowledge of the nexus between local enforcement and TPI - is an issue for insulated-panel construction and modular alike
- **Local codes, at times, are written to effectively prevent** more-affordable manufactured/modular housing e.g. local roof-pitch code requirements can de facto prevent manufactured housing and reduce the cost effectiveness of modular construction
- **No feeder program exists for licensing additional modular-installers**
- **Manufactured Housing is generally a smaller square footage** building - which is a better fit for Maine's small households (see map of single person HHs in Maine) The best hope Maine has of reducing the construction costs of new housing is via factory-built-construction of small homes(SF and rental).
- **The opportunity cost *from not moving* MHB to MOCA is very high.** MHB could play a much larger role in helping build the 84,000 units needed in the next 5 years.

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What else can Maine do to reduce construction-cost barriers? Each part of the Gordian-knot needs simplification -> possible options:

- Professional Licensure
 - Allow greater autonomy and reliance on certifications by licensed professionals; **Increase the threshold of projects that require no additional review** once signed by licensed professionals (DEP, Fire)
- Project Review
 - **Shorten approval times and increase thresholds for Permit by Rule:** e.g. if the builder doesn't hear back within the statutory window the project is approved
 - **Consolidate, streamline, simplify** -> housing-related professional standards, licensing and enforcement to MOCA (Engineering; Manuf Housing Board; Fire; MUBEC; Appraisals); Consider expanding thresholds for project review; evaluate true licensing safety requirements (e.g. increase exclusions under 1201; create micro-certifications/trade-licensing for discrete tasks)
- Standards, training, licensing, codes & enforcement

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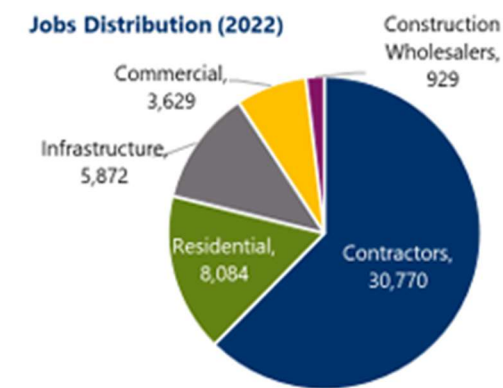
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Does Maine need additional factory capacity?

Capacity is a hot topic nearly everywhere. However, different things are meant by different people. From the interviews conducted in fall 2024, **there does not appear to be a factory capacity shortage. There is a huge human-capacity issue and a “number of companies to bid” capacity challenge.** The state needs substantial new capacity at many levels:

1. Training programs; The **existing programs often need additional “seats”** to train students who want to enter the trades. I call this “clearing the student wait lists”.
2. Create **new programming that serve as feeder programs for licensed professionals, especially modular installation licensing** - combined with micro-licensing credentials to be created
3. If there are insufficient trainers – **consider asking the national guard to help recruit and establish a dedicated training center** (staffed with returning retirees?) which would be free to Maine residents
4. Task the educational programming in the state to **create business development programming for trades people who want to start their own companies.** The state is short of skilled/trained labor – as well as the number of companies available to bid on the work. Low competition = “charge what the market will bear” mentality.
5. **Fund additional staff** (together with reexamining the essentiality of reviews/licenses) at Maine housing-related departments
6. **Accept trade licenses from other states** (e.g. plumbing and electrical). Other states are accepting licenses from elsewhere as qualifying in-state

Below and in the appendix, are some key charts from 6/2023 Maine DECD construction industry profile. NB: the green section is somewhat misleading as it contains only workers self-identifying as residential (single family housing typically). Most multi-family construction would fall within the yellow “commercial” segment. Within the dozens of subcontractors needed for a new construction project – are the large dark-blue segment of contractors. Missing are architects, engineers, surveyors, realtors and housing developers, housing-finance workers, estimators, site planners, code enforcement, municipal and state workers for licensing, project and permit review. Combined Maine likely needs well over 40,000 new workers to meet its housing production targets.



Source: Lightcast

In summary, Maine needs to address 3 wickedly complex challenges:

1. **How can Maine encourage additional adoption of factory-components?** Factory-built housing and housing-components are more ergonomic and less weather sensitive, and therefore allows older workers to stay in the industry longer. It also has the promise of lowering construction costs. In turn, lowering construction costs, and streamlining processes, lowers risk and thereby has the greatest chance to restart the private market for lower-cost (aka affordable) housing construction.
2. **How can Maine encourage the creation of new companies** (see high concentration stats in DECD report) to expand capacity?
3. **How can Maine train 10's of thousands of new workers?** There are 49,284 individuals involved in construction (and that leaves out many key pieces to the construction ecosystem). Training 40,000+ workers is akin to training a small army. Creative thinking is needed beyond how to add 100 seats to Maine's CTE electrical programing.

Appendix:

Interviews conducted fall 2024

Suppliers (third-party products + own panels)	Manufacturers	Contractors	State Regulatory and Industry Groups
Ware Butler	KBS	Wright-Ryan	MUBEC
Hammond Lumber	CertainTeed	Allied Cook	SIPA
Hancock Lumber	Foard Panels	Simon Herbert	Housing Innovation Alliance
	Boise Cascade	Green Standard Construction	MEREDA
			AGC
Developers		Architects/Designers	
Avesta Housing		Kaplan Thompson	
VOANNE		Robert Foster	
Weston Street llc			

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Assumptions and definitions:

- 1.) Affordability is a defined term. Capital “A” affordable means housing that relies on public-subsidy through a variety of programs that provide housing for lower income households. Little “a” affordable means naturally occurring lower-priced, market-based units, often either provided through older housing stock or conventionally financed construction of units that are smaller in size.
- 2.) Field Notes is the start of a conversation. It is not intended to be an exhaustive survey.
- 3.) Translating affordable monthly housing expenditures (30% of income) to an estimate of construction costs supported by that payment, necessitates a range of assumptions. Chief among the assumptions are interest rates (Maine Housing’s first-time-buyer, APR of 6.495% was used at the time of this analysis); taxes and insurance. Including property taxes may seem excessive for some non-profits, however other landlords/owners would have to pay that expense – so I have included it to be conservative in these estimates.
- 4.) My calculation of “implied affordable construction budget” presumed 1 full-time minimum wage worker, who would need an underlying affordable construction cost of \$70-80,000. Updated as of 1/1/2025 to a min. wage of \$14.65, a 1 minimum-wage-worker household would need to spend \$762/month on housing to be affordable. This income presumes a 40-hour week and 52 weeks/year of employment, or \$30,472/year in income. This is roughly equivalent to HUDS AMI estimate of a 1 person HH in Kennebec County at 50% AMI. Note the recent increase in the minimum wage only adds a little over \$1000/year in income or an extra \$312/year towards housing expenditures.
- 5.) We included builders across types of housing. The affordability gap is not much different between multi-family and single family; nor between built-to-rent vs. built-to-own housing.

Service costs, extra regs (ADA/fire) and occupancy costs for multi-family offset higher density land use benefits.

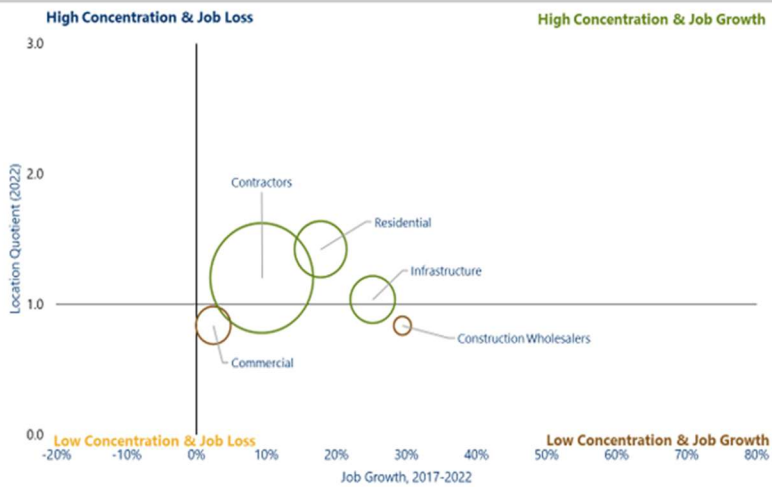
** 6 recent awards

Maine Housing Announces \$30 Million of Funding Awards

MAHC appreciates Governor Mills and the bipartisan support of legislators to build affordable homes for all Maine people. In the last two years, MAHC has introduced and successfully advocated for \$100 million in state funding for building affordable housing.

Project Name	Developer	Location	Tenant type	Number of units	Subsidy	Total development costs
Martel School Apts	L/A Area Housing Dev Corp.	Lewiston	Older Adults	44	\$ 5,400,000	\$ 14,569,626
King Street Apartments	KVCAP w/LB Dev	Waterville	Family	37	\$ 4,725,000	\$ 15,875,775
Iron Heights	Matt Morrill	Gardiner	Family	32	\$ 4,088,750	\$ 9,647,334
Malta Street Senior	Augusta Housing w/DC	Augusta	Older Adults	34	\$ 4,828,000	\$ 11,270,020
3il Home at The Downs	3i HoME w/POAH	Scarborough	Family	51	\$ 5,400,000	\$ 23,302,717
Sunset Avenue	Bangor Housing	Bangor	Older Adults	50	\$ 6,000,000	\$ 18,466,431
				Total	\$30,441,750	\$93,131,903

KEY INDUSTRIES



Findings:

- The Construction sector added 5,310 jobs between 2017 and 2022. Maine's Construction sector has a higher industry concentration than the national average (U.S. location quotient = 1.00).
- The largest subsector in terms of jobs is Contractors with 30,770 jobs in 2022. This makes up more than 62% of the total sector.
- Construction job growth came from each of the subsectors: Infrastructure (+1,181 jobs, +25%), Residential (+1,217 jobs, +18%), Contractors (+2,615 jobs, +9%), Construction Wholesalers (+211 jobs, +29%) and Commercial (+86 jobs, +2%).
- Industry concentration for the Construction sector has less regional variation than most other types of economic activity. This is due to most of the activity serving local demand for Construction. None of the subsectors have a location quotient above 1.5. Residential has the highest quotient (1.42) which means it has more than 40% more activity than expected for a region of Maine's size. The other two subsectors with location quotients over 1.00 are Contractors (1.21) and Infrastructure (1.04).

Source: Lightcast

Note: Figure includes 4-digit NAICS industry groups with the bubble size related to the number of jobs in 2022

DATA NOTE:

There are three performance measures in the chart above that combine to relate the competitiveness of this activity, (1) bubble size is size of industry by jobs, (2) vertical axis measures industry concentration in Maine, (3) horizontal axis measures recent jobs growth.

SECTOR SUMMARY: MAINE PERFORMANCE

Construction Summary

Jobs: 49,284

- Data for 2022
- 6.9% of the state's total employment

Job Growth: +5,310

- Data compares 2017-2022
- Job gains are 41.8% of all Maine job gains since 2017

Job Growth Rate: +12%

- Data compares 2017-2022
- Sector growth in Maine is greater than the U.S. (+8%)

Concentration: 1.17

- Data for 2022
- Maine has a 17% higher jobs concentration than the national average

Establishments: 6,137

- Data for 2022
- The average firm size of 8.0 jobs makes it lower than US average for the sector 10.8

Average Earnings: \$64,244

- Data for 2022
- Higher than the State's Average earnings for all sectors (\$66,730) but lower than the U.S. rate for this sector (\$77,316)

Competitive Effect: +1,185

- Data compares 2017-2022
- Local Advantages contribute substantially more jobs than expected given industry trends and national growth

Gross Regional Product: \$4.5 Billion

- Data for 2022
- 5.9% of Maine's total GRP (greater than U.S. where this sector only makes up 4.7% of the total)

Productivity: \$92,097

- Data for 2022
- Lags the U.S. rate of \$107,501 GRP per worker

Total Sales: \$9.2 Billion

- Data for 2022
- 28% of sales exported out of state
- Accounts for 5.4% of All Maine sales, outperforming the U.S. (4.5% of total sales)

Demand: \$8.3 Billion

- Data for 2022
- 79% of the demand for the sector is met in-region, the remaining 21% is imported

Leakage: \$1.8 Billion

- Data for 2022
- An estimated \$1.8 billion could be recaptured by Maine firms

Source: Lightcast