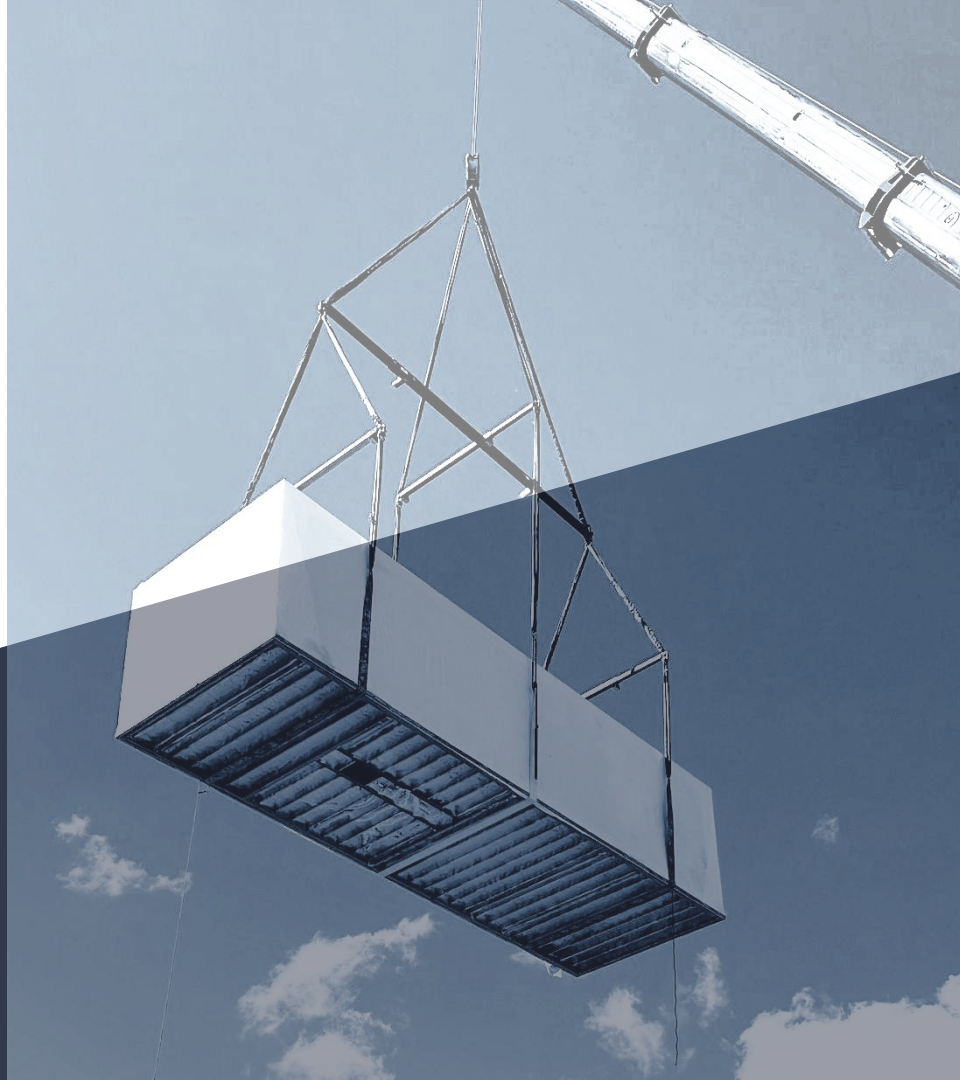


# Modular Home Outlook

ULI Utah: 2024 Housing Summit

By McCall Judd

*\*Not for distribution without prior approval*



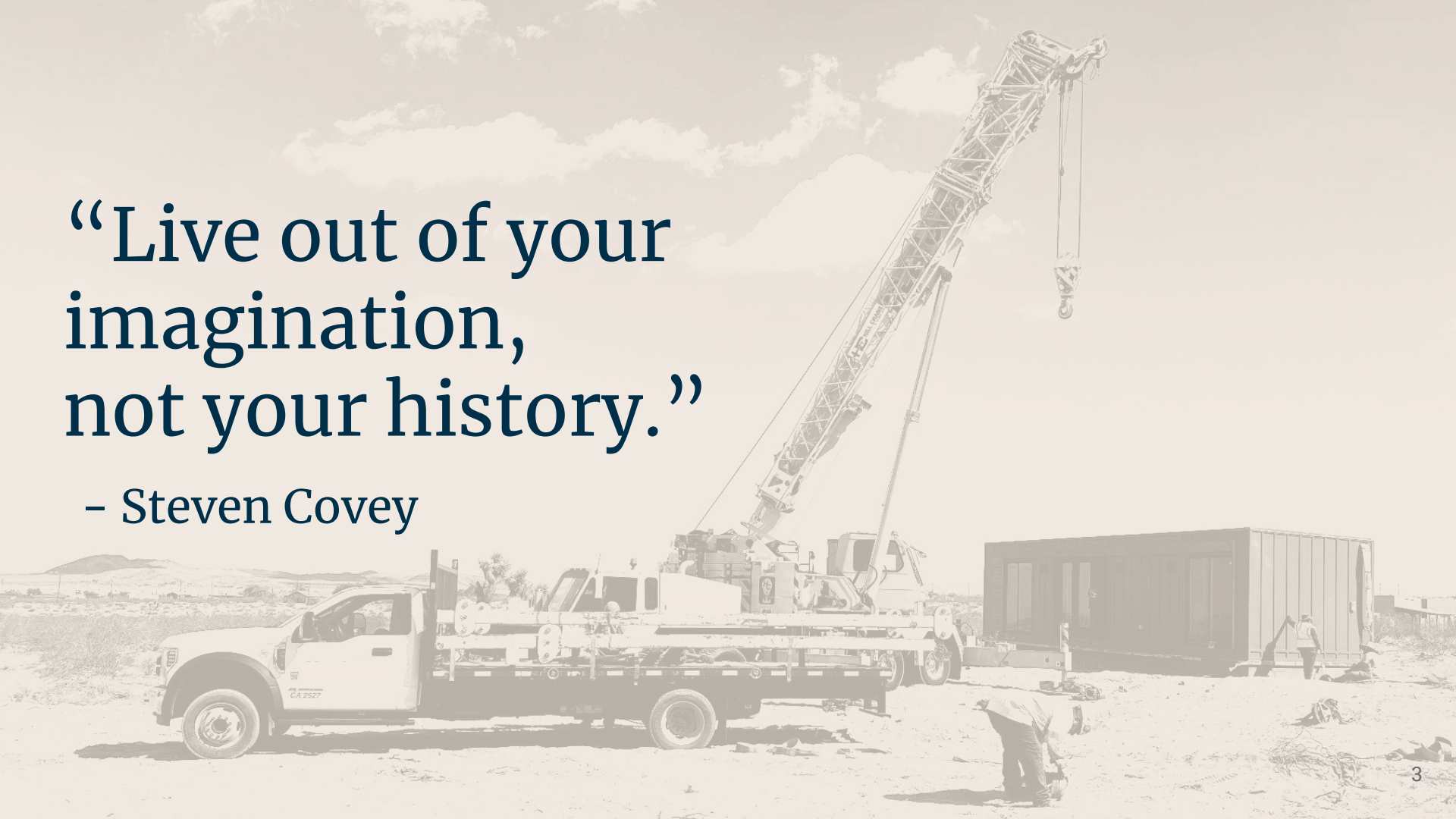
# Discussion Points

- *The Need*
- *The Method*
- *The Data*
- *The Opportunity*



“Live out of your  
imagination,  
not your history.”

– Steven Covey



# Imagine...

You could provide **high quality affordable housing** of all types.

You could build in **remote locations** or areas with **temperature and labor constraints**.

You could **control construction costs** and **material supplies**.

You could **build and price your as-built** without costly value engineering.

You could cut your construction **schedule in half** and construct producing **minimal waste**.

You could have a **clean and secure jobsite** with **less onsite delays** and unknowns.

You could control and **rejuvenate the construction workforce** and increase **workplace safety**.

You could significantly **reduce risk** on your projects and **reduce your environmental impact**.

# The Need

## WE NEED

All Types of Housing Supply

Faster & Flexible Housing Options

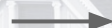
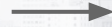
High Quality & Sustainable

Affordable & Financeable

Better Materials & Consistent Supply Chain

Rejuvenated Construction Workforce

Reduce Risk & Market Instability



## WITH MODULAR

Multifamily, SFH, BFR, ADU, Workforce, Relief, Homeless

Decreased Construction Schedule / Can Be Remote

Built in Controlled Environment / Less Waste

Controlled Costs / Funding Incentives

Standardization / Innovation & Inventions

Manufacturing Entices Larger Populations of Labor

Safer / Less Time in a Political & Economic Cycles

# The Method



**Modular** is a hybrid of onsite traditional construction and manufacturing industries by constructing buildings offsite in a factory-controlled environment, then transporting them to the final site for assembly.

**Onsite Construction** - design building, plan site, assemble modules into final structure - sitework, foundation prep, and utility connections.

**Offsite Manufacturing** - fabricating building components (walls, floors, roofs) in an assembly-line production process - standardized processes, quality control, efficient use of materials and labor.

The term “**modular**” refers to volumetric, three-dimensional boxes (or modules) fabricated at an offsite location. Regulated at the state and local levels by building code administrators and authorities having jurisdiction.

# Key Advantages



**Cost Savings & Certainty** - Reduces onsite labor constraints - efficient processes, fewer labor hours, reduces waste - shortened construction schedule reduces interest carry costs and leases up faster - can be exempt from prevailing wage inflationary rates - reduces change orders and contingencies.

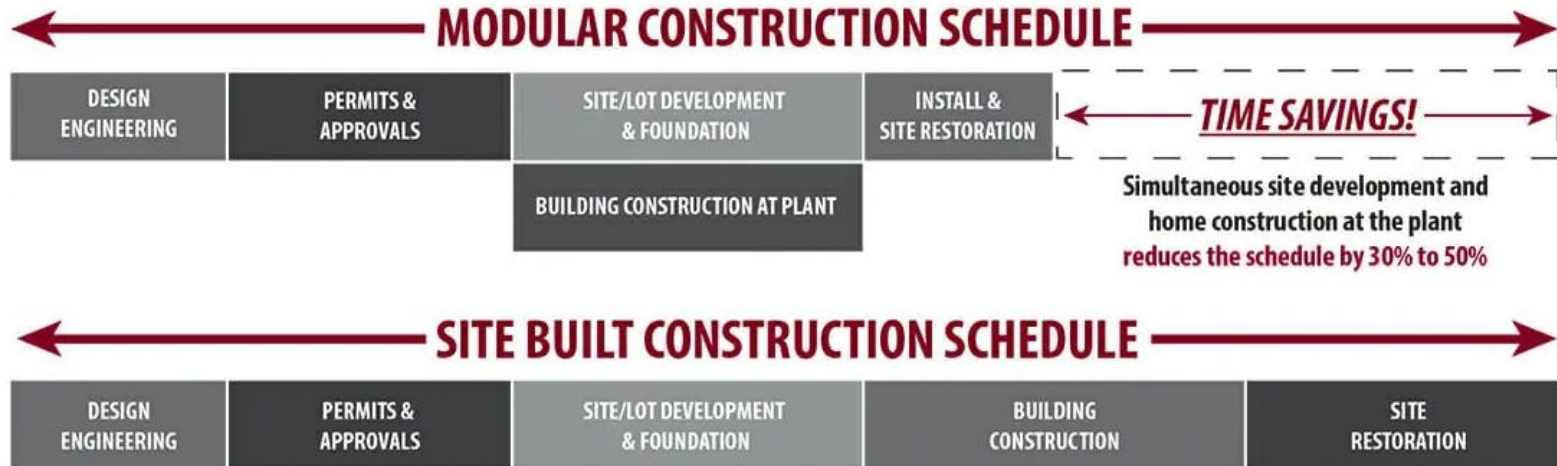
**Schedule Savings & Certainty** - site work and modular building are done simultaneously - 20-50% accelerated timelines - 60-90% is built in a factory, mitigating weather delays - occupancy obtained sooner = faster ROI.

**Quality Control & Assurance** - IBC/IRC/NBC codes - factory and design approval of fabrication, transportation, and assembly of module - approved by state authorities, local authorities and 3rd party in-plant inspections mandated by the state.

**Environmental Impact** - Significant waste reduction - lower carbon footprint, increased ability to relocate, renovate, and repurpose modules - greater energy efficiency, tighter building envelope - reduces weight waste up to 83.2%, offsite framing reduces wood waste by 23% - reduces total energy use by 50% - 20% less material used overall - reduced schedule reduces CO2 emissions.

**Worker Safety, Productivity, & Diversity** - 3x more workplace fatalities onsite vs manufacturing - 1 vs 2+ story buildings reduces fall hazards - less noise, traffic and onsite community impact - invites diversity, older with disabilities, women workers, younger workers and trades - larger numbers of potential workers - better quality of life in a temperature controlled facility vs dirty, weather exposed, physically demanding construction site - reduced onsite labor = reduced hazards = reduced risk.

# Schedule Impact





# Limitations



**Design Constraints** - Standardization & Size Constraints

**Transportation & Logistical** - Costs & Damage Risks

**Site Limitations** - Access Issues & Foundational Requirements

**Regulatory & Zoning Challenges** - Local Building Codes & Zoning Restrictions

**Perception & Market Acceptance** - Stigma & Market Fit

**Financial Considerations** - Upfront Costs & Financing Challenges

**Skill Requirements** - Specialized Knowledge

**Integration with Existing Structures** - Compatibility Issues

# The Data

## CASE STUDIES

1. **MPHA Family Housing Expansion** - Minneapolis, MN

*MPHA - Minneapolis Public Housing Authority*

*DJR Architecture - Architecture | Interior Design | Urban Planning*

*Rise Modular - Modular Manufacturer*

*Frerichs Construction - General Contractor*

2. **St. Margaret's Place** - Shoreline, WA

*Synergy Inc. - Woodinville, WA - General Contractor*

*Synergy Modular - Scottsdale, AZ - Modular General Contractor*

3. **IDA Street Townhomes** - San Rafael, CA

**Rabbit Row Employee Housing** - Wilson, WY

*Irontown Modular - Spanish Fork, UT - Modular Manufacturer*

4. **Courtyard Marriott Hotel Nanaimo** - Vancouver Island, BC, Canada

*PEG Companies - Provo, UT - Developer & Asset Manager*

*Nexii Building Solutions - Squamish, BC, Canada - Green Construction Technology Company*

*\*Information for these case studies was provided by DJR Architecture, Rise Modular, Synergy Modular, Irontown Modular, PEG Companies, and Nexxi.*

# MPHA Family Housing Expansion Innovations

- Scattered Site Multi-unit “Missing Middle” Family Housing as a single LIHTC (Low Income Housing Tax Credit) development project
- Full Volumetric Modular Construction
  - Innovative Procurement Process
- Capital Stack of Affordable Resources
  - Impact of Modular and Scattered Site
- Made possible through:
  - Minneapolis 2040 Plan & Zoning Reform
  - Maximizing HUD Public Housing Tools
  - Policy and funding focus on expanding deeply affordable housing and innovative construction technology
- Designed for maximum efficiency and replicability



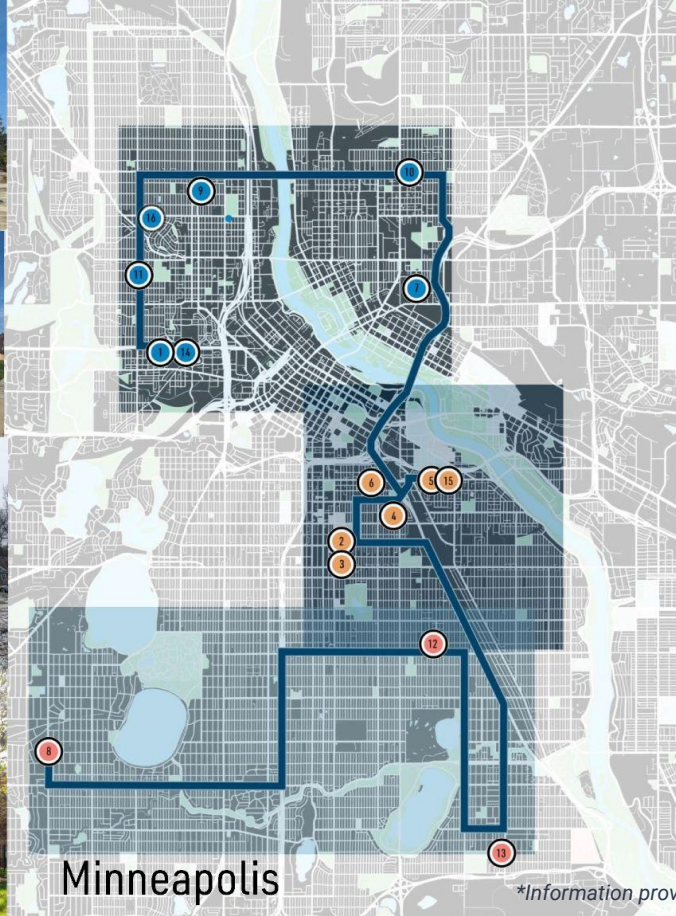
DJR



*\*Information provided by DJR & Rise Modular*

# PROJECT FACTS

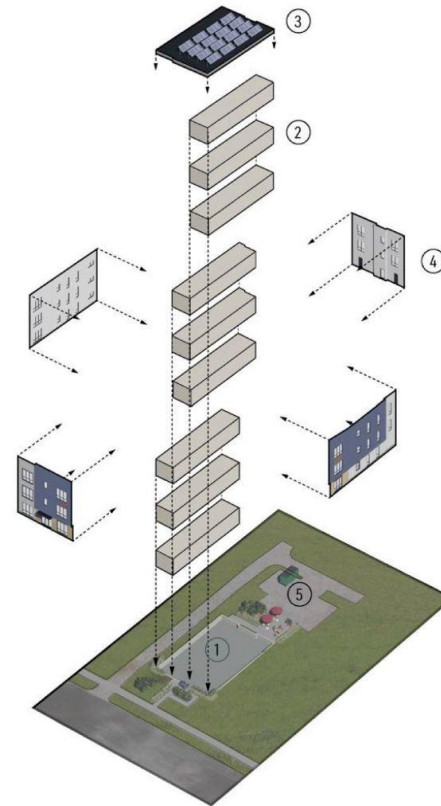
- 16 – 4 and 6 plex Missing Middle public housing apartment buildings scattered across Minneapolis.
- 84 two- and three- Bedroom family units.
- 126 volumetric modules installed over 4 months.
- 13-month construction timeline to complete 130,000 sf of Housing
- Minneapolis Public Housing Authority has 5000+ waitlist for family housing units.
- All units will have project-based vouchers meaning that all units will be available to households at or below 30% AMI
- Units will have long-term affordability
- MPHA (CHR) will be the long-term owner and operator of the property
- Future tenants will come from MPHA Family Housing Waitlist



\*Information provided by DJR & Rise Modular

# WHY MODULAR?

- RFP provided the opportunity to compare traditional and modular construction
- Modular significantly aligned with the scattered-site nature of the project
- Construction timeline was 33% faster than traditional
  - Reduces impact on existing residents and neighbors and allows them to house new families sooner
- The modular approach provided a 3-21% cost reduction compared to traditional in a scattered site setting at the time of RFP
- As a long-term owner, the team was excited about the superior construction product modular construction provided
- Dramatically reduces impact to the neighborhood
  - Less truck traffic for material delivery
  - Fewer workers onsite means less construction worker traffic/parking
  - Construction activities move inside much faster



*\*Information provided by DJR & Rise Modular*

# DESIGN

- Initial design created through RFP process
- Design has a singular building type with a 4- and 6-unit variant
  - Translates to cost savings, construction management efficiencies, and ongoing maintenance savings
  - 2-story, 4-unit
    - 1 two-bedroom and 3 three-bedrooms
  - 3-story, 6-unit
    - 2 two-bedrooms and 4 three-bedrooms
- Resident and Property Management meetings to receive feedback on unit layout, site plans, and mechanical systems.
- Average unit SF – 1,329
- 26 2-bedrooms, 58 3-bedrooms
- +130,000 SF across 16 buildings

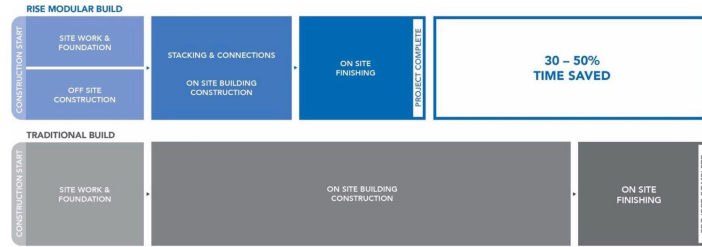


*\*Information provided by DJR & Rise Modular*

## ALIGNMENT WITH HOUSING POLICY

City Housing Policy Strategies	Family Housing Expansion Project
Pursue innovative housing types & construction methods	Modular construction of “missing middle” building type
Produce 3-bedroom apartments for families	58 apartments with 3 bedrooms
Serve lowest-income households	All units have project-based vouchers, 64 reserved for 30% AMI
Ensure long-term housing affordability	Controlled by PHA
Improve & expand public housing stock	Redeveloping aging stock, building new
Build in all parts of the city	Scattered sites across the city
Address and prevent homelessness	17 units reserved for homeless households

## MODULAR CONSTRUCTION IMPACT ON SCHEDULE



## SOURCES AND USES

Sources	
Citi - First Mortgage (PABs)	\$8,904,000
US Bank – Equity (4% LIHTC/Solar credits)	\$20,426,465
City of Minneapolis (ARRA/Local Trust Fund/General Fund)	\$5,800,000
Other Local Sources	\$1,900,000
MPHA - Sponsor Loan	\$12,474,653
MPHA Deferred Developer Fee & other	\$1,508,444
<b>Total</b>	<b>\$51,013,562</b>

Uses	
Acquisition	\$18,700
Construction	\$38,916,972
Development Costs	\$5,007,733
Reserves/Escrows	\$806,391
Financing	\$2,638,780
Developer Fee	\$3,624,985
<b>Total</b>	<b>\$51,013,562</b>
TDC/Unit	\$607,304
TDC/Gross Square Foot	\$369

## CPED FUNDING COMMITMENTS

Housing Revenue Bonds	\$25,225,000 (42% of CPED's annual allocation)
Low Income Housing Tax Credits	\$2,165,081
ARPA	\$4,000,000
Affordable Housing Trust Fund (local)	\$1,200,000
General Fund	\$600,000



\*Information provided by DJR & Rise Modular

## ST MARGARET'S PLACE SHORELINE, WA



**Built by Synergy** with NRB Modular Solutions, Prefab Logic, Axiom PLLC & ACC U Set Construction - **First Place, Green Building**

*The project offers housing for single adults exiting homelessness or at risk of it, with half the residents earning at or below 30% of the Area Median Income and the other half at or below 50%.*

**GROSS SIZE OF PROJECT** 71,681 SF

**UNIT COUNT** 100 UNITS, 80 MODULES

**SCHEDULE** 477 DAYS / 14 MOS

*Unforeseen debris cleanup delayed site work, approvals delayed modules shipment, weather delayed modules set - would have been 7 mos*

**ORIGINAL GMP** \$24,093,741

**FINAL COST** \$26,552,385

*Unforeseen debris & soils, design changes, & material escalation*

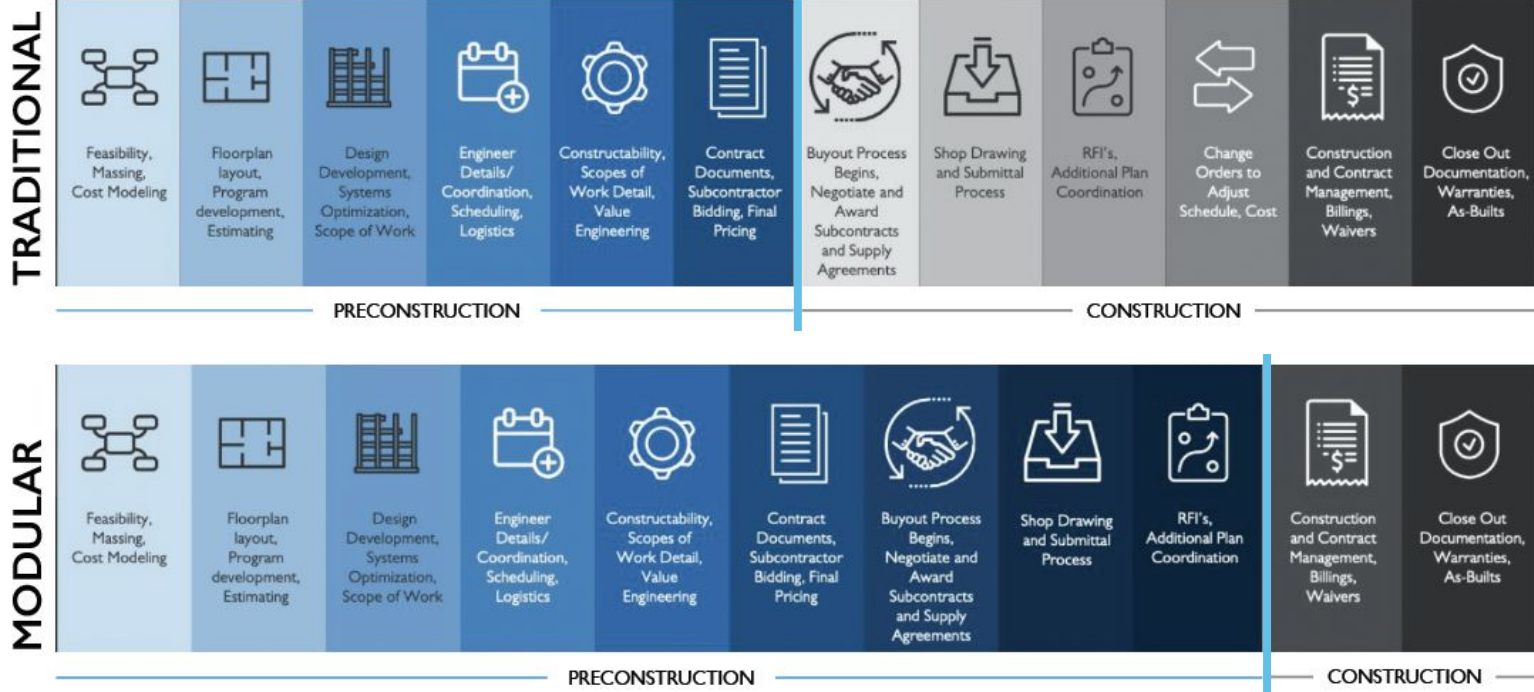
**\$265,000 PER UNIT**

*With the schedule delay and cost increase*



*\*Information provided by Synergy Modular*





**FLOORPLAN FIRST DESIGN**

**INTEGRATED TEAM UP FRONT**

**NEW LEVEL OF PRECON**

*\*Information provided by Synergy Modular*



# SYNERGY INCORPORATED

- HEADQUARTERS IN **WOODINVILLE, WA**
- OVER **10,000 MULTI-FAMILY** UNITS BUILT IN THE LAST DECADE ALONE
- **9** NATIONAL EXCELLENCE IN CONSTRUCTION **AWARDS**
- **6,500+ AFFORDABLE HOUSING** UNITS BUILT
- **34 YEARS** IN BUSINESS



# SYNERGY MODULAR

- HEADQUARTERS IN **SCOTTSDALE, AZ**
- **THOUSANDS** OF MODULAR BOXES SET
- SUCCESSFULLY COMPLETED MODULAR PROJECTS IN **WA, TX, AND CA**
- SUCCESSFULLY EXECUTED PROJECTS BOTH WITH **WOOD & STEEL VOLUMETRIC MODULAR** CONSTRUCTION

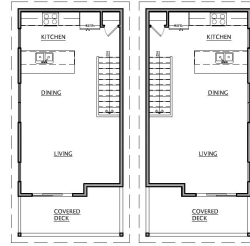
*\*Information provided by Synergy Modular*



SCAN ME



ResidentialRendering.com



## Rabbit Row Employee Townhome Housing

*Irontown Design - For a Ski Resort*

12 Units - 2b, 1ba - Standard Finishes  
1 Car Garage, Top/Bottom Decks

Unit Size: 1,002 sf Living Space

Schedule: 6 months

Modular Cost: \$1,600,000 - \$133,000/unit\*

*Includes modules, delivery - Set in 2020\**

Site Cost: \$900,000 - \$75,000/unit\*

*Includes sitework, foundation, garages, stitch*

Land Cost: \$500,000

Total Cost: \$3,000,000 - \$250,000/unit\*

Sale Price: \$400,000/unit - \$4,800,000

Net Profit: \$1,800,000

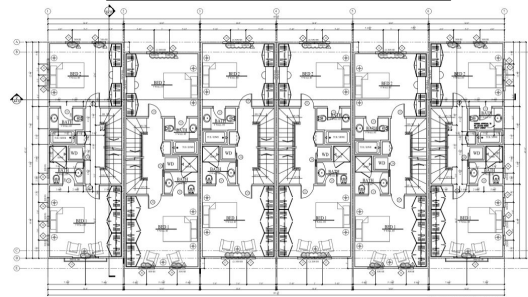
\*This project was set in 2020. In 2024, modular costs would range between \$165,000-185,000/unit, depending on unit plan, finishes and amount of units ordered.

*\*Information provided by Irontown Modular*





**IRONTOWN**  
MODULAR



## Ida Street Luxury Townhomes

*Irontown Design - Option for Attainable Housing/Rental*

6 Units - 2b, 2ba - Luxury Finishes  
2 Car Tandem Garage, Rooftop Deck/Kitchen

**Unit Size:** 1,268 sf Living Space - 2,425 Total sf

**Schedule:** 6 months

**Modular Cost:** \$1,400,000 - \$234,000/unit\*

*Includes modules, delivery - Set in 2020\**

**Site Cost:** \$800,000 - \$134,000/unit\*

*Includes sitework, foundation, garages, stitch*

**Land Cost:** \$1,000,000

**Total Cost:** \$3,200,000 - \$534,000/unit\*

**Sale Price:** \$1,100,000/unit - \$6,600,000

**Net Profit:** \$3,400,000

\*Project was set in 2020. In 2024, Modular costs for Ida Street ranges between \$340,000-400,000/unit, depending on selected finishes and unit count.

*\*Information provided by Irontown Modular*



## Courtyard by Marriott Hotel - Nanaimo *Offsite Exterior Panels*

**Large Scale Project:** 9 Story Hotel, 172 Rooms

**Prefinished Offsite:** 750 Exterior Panels  
Manufactured offsite at Squamish based Nexxi production facility with integrated finishes, services, and windows

**Energy Efficient:** 25% less embodied carbon in building envelope

**Environmentally Friendly:** Nexxi panels are airtight and comprised of non-toxic materials.

**Component Building**



*\*Information provided by PEG Companies and Nexxi*

# Data Summary

1. **MHPA | Rise Modular | DJR Architecture | Frerichs Construction - MHPA Family Housing Project - Minneapolis, MN**

Modular construction combined with good partners, expert project management and teamwork. This project had everything - planning - YIMBY - urban setting - scattered "Missing Middle" sites - affordable - funding. This modular for urban infill project reduced project schedule, and with less time on-site, contributed to less disruption on the community. Other cities should model this project.

2. **Synergy Inc. & Synergy Modular - St. Margaret's Place - Shoreline, WA**

Even with typical development delays and changes orders, this housing project was still affordable because of the use of modular construction and was a creative solution to homeless housing. Modular construction works in high AMI areas with prevailing wage and labor constraints. Example of a longstanding traditional general contractor utilizing modular construction methods.

3. **Irontown Modular - Rabbit Row Employee Housing - Wilson, WY | IDA Street Townhomes - San Rafael, CA**

Local Utah wood manufacturer with 44 yrs of experience servicing AZ, CA, CO, ID, MT, NV, OR, UT, WY. They own many standardized designs that are stackable and can be re-used by developers. They pioneered ADU's delivered to CA and are transport and logistic experts.

4. **PEG Companies | Nexii - Courtyard by Marriott - Nanaimo - Vancouver Island, BC, Canada**

PEG is a well established company that explores innovative approaches. Being in a remote location with labor constraints, this project is a good example of innovative strategies applied to service needed communities and hard to reach areas. These panelized systems can also be used in manufacturing to create modular buildings.

# The Opportunity

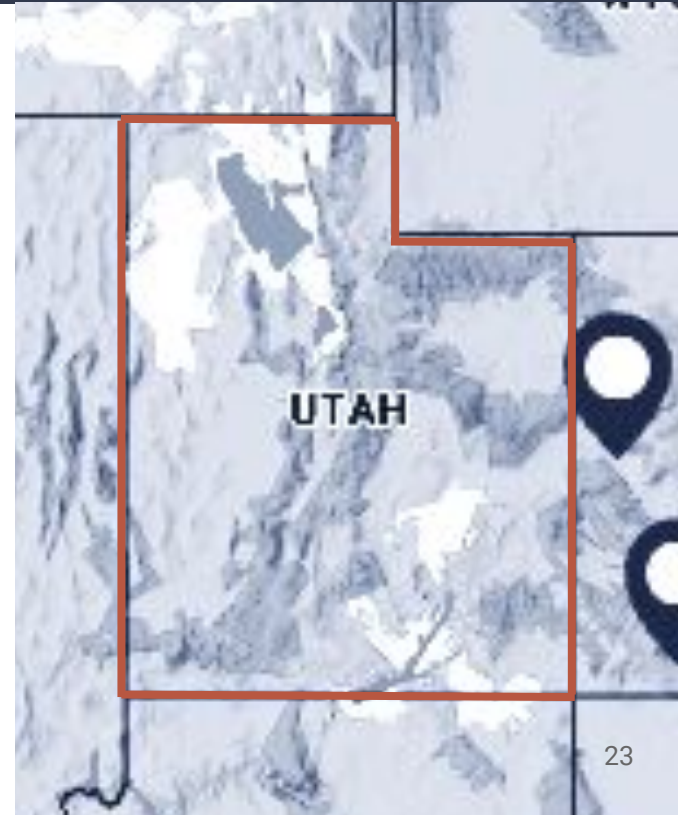
**Utah** - Senate Bill 168 (SB 168) was passed in 2024 that establishes a statewide permitting aimed at facilitating efficient use of offsite construction.

Addresses the state's housing affordability crisis by encouraging the use of innovative building methods, particularly modular and offsite construction.

Aims to streamline regulations, reduce costs, and increase the availability of affordable housing.

Offers incentives for developers who utilize modular construction techniques, which can significantly reduce construction time and costs.

Mandates updates to building codes to accommodate and encourage these modern construction methods, making it easier for developers to implement them in new housing projects.



# Utah Opportunity

## Modular Building Institute

Map of modular multifamily projects completed across the country.

Utah currently has

**ZERO**

built modular multifamily projects.





# Up Next

**Architectural Design** - Architects and Designers are needed that specialize in modular design, product and code knowledge and create as-built design prior to permitting.

**Permitting** - There is no unique “modular building code.” Modular projects must meet local codes in force where the building will be placed, similar to site-built projects using IBC, IRC, NBC codes.

**Industrialized Construction** - Onsite General Contractors should explore adding a modular segment. There will always be an onsite component to modular construction. GC's have control of subcontractors, labor, knowledge, estimating, and supply chain. Modular methods can bring more labor potential to an aging construction workforce.

**Manufacturing** - More Manufacturers will fail through this growing industry, but more will open, learn from the failures and become more efficient. Future manufacturers will automate and build from components. There are currently only 255 Modular factories in North America. We need more factories!

**Product Design** - New Products and Materials will be invented that will help both onsite and offsite methods. These will lead to standardized modular building components.



**“Imagination is the  
beginning of creation.”**

**– George Bernard Shaw**

# Resources

Modular Building Institute - <https://www.modular.org/> | [2024 MBI Permanent Modular Construction Report](#)

McKinsey & Company Study - [Modular research construction: From projects to products](#)

Minneapolis Public Housing Authority (MPHA) - <https://mphaonline.org/>

DJR Architecture - <https://www.djrarch.com/> Contact: Amanda Pederson | Associate - Project Manager | [apederson@dj-inc.com](mailto:apederson@dj-inc.com)

Rise Modular - <https://risemodular.com/> Contact: Troy Tiddens | VP of Preconstruction | [tiddens@risemodular.com](mailto:tiddens@risemodular.com)

Frerichs Construction - <https://frerichsconstruction.com/>

Synergy Incorporated - <https://synergyi.com/> Contact: Justin Stewart | CEO | [justin@synergyi.com](mailto:justin@synergyi.com)

Synergy Modular - <https://synergymodular.com/> Contact: McCall Judd | Director of Strategy | [mccall@synmod.com](mailto:mccall@synmod.com)

Irontown Modular - <https://irontownmodular.com/> Contact: Kam Valgardson | General Manager | [kam@irontownmodular.com](mailto:kam@irontownmodular.com)

PEG Companies - <https://pegcompanies.com/> Contact: Robert Schmidt | Managing Director | [rschmidt@pegcompanies.com](mailto:rschmidt@pegcompanies.com)

Nexii Building Solutions - <https://www.nexii.com/>