



SHEET METAL & AIR CONDITIONING
CONTRACTORS' NATIONAL ASSOCIATION

Emerging Trends in Construction & What's in it for Us?

April - 2024

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SMACNA Past
President



NEW HORIZONS

F O U N D A T I O N

A Chance to Grow

2022 Futures Study Update

What's in it for me?



2022 Futures Study – the Process



Surveys – 30 key issues or categories and SMACNA Contractors



Informed Data and Research



Distilled into 14 summary categories/trends/discussions



2022 Futures Study

30 Survey Categories

Impact Area	Survey Participant Rank 4 (Highest) – 1 (Lowest)
Organized Labor Future Engagement	4
Supply Chain Issues	4
Profitability Growth	4
Risk	4
Management/Leadership Attraction	4
Skilled Craft & Flexible Labor Sourcing	4
Advent of COVID-driven Factors	3
Cashflow Impact of Project Requirements	3
Work Profitability Mix	3
Increase in Warehouse Space	3
Facility Service and Maintenance	3
Customer Carbon Footprint Reduction	3
Customer Energy Cost Reduction	3
Smart Buildings	3
Customer Increased Requirements	3



2022 Futures Study

30 Survey Categories

Impact Area	Survey Participant Rank 4 (Highest) – 1 (Lowest)
Autonomous Tools	3
Big Data, KPI Analytics, Benchmarking	3
Widespread Adoption of Lean Principles	3
Increased Remote Workforce	3
Industry Consolidation & Mergers	2
Integrated Project Delivery (IPD)	2
Decline in Office Space	2
Facility Monitoring by HVAC Contractor	2
Outsourced Facility Management	2
Procurement: Aggregate Purchasing	2
Design Delegation/Outsourcing	2
Data Islands on Disparate Systems	2
Diversity, Equity & Inclusion (DEI) Issues	2
Mega Projects	1
3-D Printing	1



2022 Futures Study

The 14 Trends

- Prefabrication and Modularization Advancements
- Widespread Adoption of Lean Principles
- Skilled craft, Flexible Labor Sourcing/Organized Labor Engagement
- Software Challenges with the AEC Industry
- The Future of Supply Chains
- Managing Risk & Profitability Growth
- Connected Construction for Collaboration
- Mega Projects
- Industry Structure and Consolidation
- Big Data, KPI Analytics, Benchmarking
- Autonomous Tools
- Internet of Things “IoT”
- Energy Cost Reduction Requirements/Carbon Footprint
- Economic/Legislative/Pandemic Megatrends



2022 Futures Study

2022 Futures Study

The Four Key Issues



Workforce Development



Customer



Technology & Productivity



Risk and Profitability



Workforce Development

- The shortfall will continue
- Embrace diversity or fall behind
- What will become of training centers
- Our pipeline can't keep up as it is built today

- SMACNA Contractors ranked low:
 - Diversity and Inclusion (survey results)
 - Mega Projects

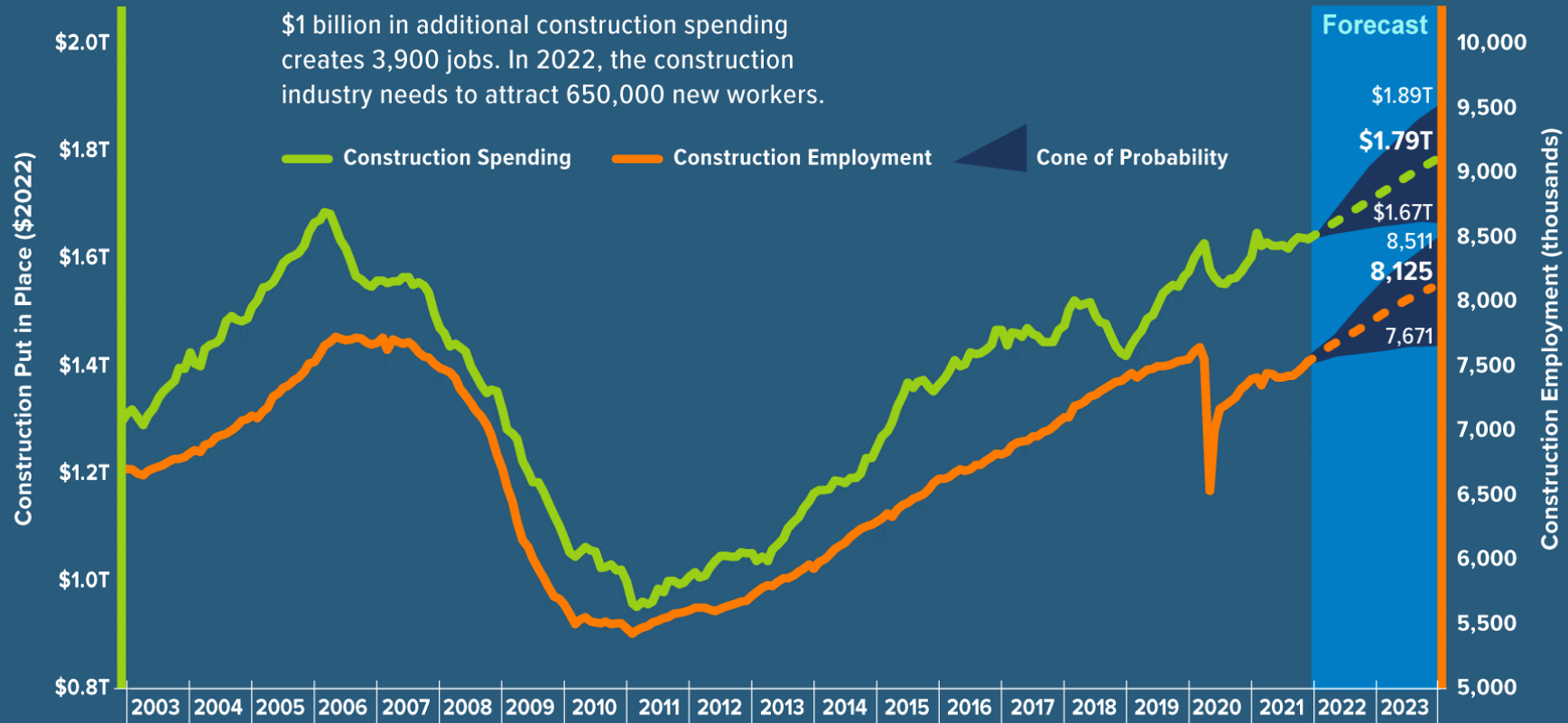


The Workforce Dilemma - Construction



Construction Spending and Employment Forecast (High, Base, and Low Scenarios)

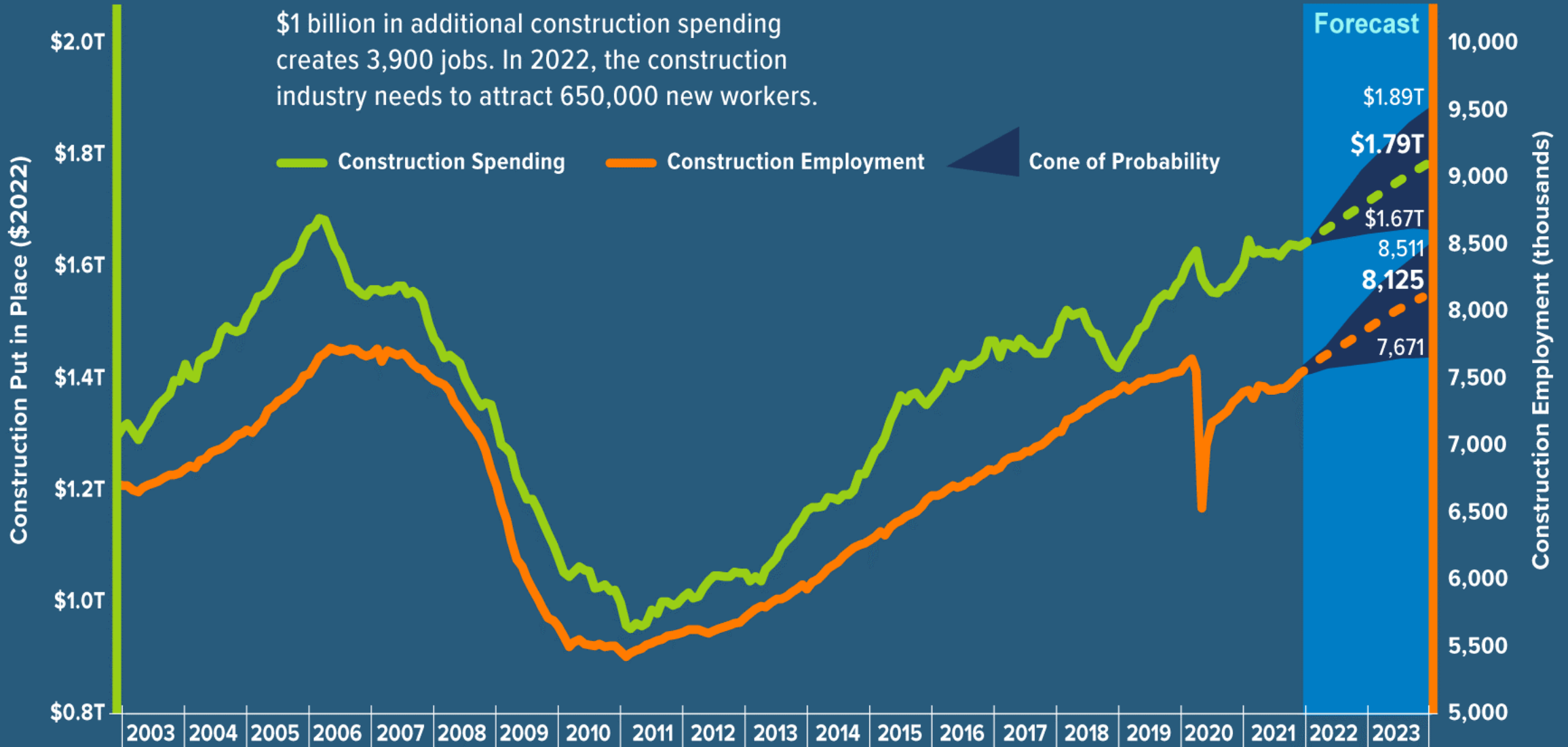
\$1 billion in additional construction spending creates 3,900 jobs. In 2022, the construction industry needs to attract 650,000 new workers.





Construction Spending and Employment Forecast (High, Base, and Low Scenarios)

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What Can We Do?

Workforce Development

- Increase the recruiting - training centers
- Creative programs like Heavy Metal
- Internship programs
- Open doors – non-traditional
- Diversity with local agencies' help
- Onboarding, Mentoring & Training



Chapter Execs – focus on emerging needs

- Review the NHF research on selection, coaching, and mentoring
- Study your circle and who's in it. Know how your local unions are doing with diversity and inclusion. Do they look like your communities?
- Develop strong relationships with labor through your local LMC; meet with purpose – stick to one subject at a time; use technology
- Increase visibility with agencies and not-for-profits who could contribute
- Don't neglect the need for office and non-bargaining staff!



The Customer

- Continues to be highly variable
- Is becoming more risk averse
- Has increasingly high expectations
- Is concerned about energy
- Is also experiencing changes in workforce
- Contracts are getting tougher



**What can
we do?**

Customer

- Educate staff on the big risks to manage
- Get closer to the customer – sell what they want, not what you have
- Educate them, be a source of expertise
- Exceed expectations, not specs, and be fast
- If you're a bid and get contractor, be the low-cost provider
- Be lean in a vacuum; get better



What's a Chapter Exec to Do?

- See the previous slide – what you must do with your “customers”
- Bring in presenters on contract risk and insurance
- Consider the impact of your website and services!
- Run specialized programs for contractors and customers
- Pay attention to opportunities to partner with MCAA and NECA
- Customer service programs
- Educate the contractors on new programs like 179d's new incentives



Risk & Productivity

- Supply chain risk will continue
- Just in time is a fallacy
- Cost and Schedule Certainty Risk
- Unfair risk allocation will increase
- Failure scenarios abound
- Contract risk is increasing
- Big Data and AI – Low Interest
- Pre-fabrication, modularization, procurement risk



What's a Contractor To Do?

Risk & Productivity

- Don't let a bad contract sink your boat
- Train all staff on managing risk
- Create a MAP for increasing profits
- KPMs, use data, set expectation, drive outcomes
- If you're paddling furiously, get a motor; the boat needs power!
- Sharpen your hiring skills; make every hire count
- Brainstorm with staff on future scenarios
- If you can't swim, consider getting into someone else' boat



What can a Chapter Exec Do about Risk and Productivity?

- Take advantage of SMACNA programs on these subjects
- Consider group showings of webinars (or taped programs) at your office or via Zoom
- As with the customer, contract and insurance training is available
- Promote NHF research (such as the recent Supply Chain publication)



Technology & Productivity

- BIM skill is not optional – it's table stakes
- IPD has not become the standard
- Models aren't fully-leveraged
- The process isn't lean
- Linkage to fabrication for managing productivity
- Software will converge and interface
- The cost of entry is high
- The workforce challenge



What's a Contractor to do?

Technology & Productivity

- KPMs – Use the data and share it with the shop and field
- Invest in tech that increases productivity
- Connect your BIM with the shop and field
- Work on interconnecting the stuff!
- Invest in throughput and bottom line; avoid the cool new thing
- Learn more about lean, value streams, value stream mapping, throughput, MUDA and Kaizen



The Chapter Exec - Technology and Productivity

- Consider attending the technology conference put on by all three associations
- Promote the NHF study on Tech Adoption – great advice
- Expose contractors to hiring processes using tools to pre-quality BIM or VDC staff
- SMACNA has several programs on jobsite productivity and field leadership
- Bring in an out of box presenter to meet with your foremen



The McKinsey Future

Transform

- Master Digitalization – Seamless integration into the value stream
- Operational Excellence – Lean, Procurement, Logistics – beat the mark
- Specialize – Scale up or down, find niches (renovation, or complex work)

Disrupt

- Become a subassembly builder or partner with manufacturers
- Increase the amount of off-site subassembly or multi-trade fab
- Become an advisor or energy consultant to clients



What did We Miss?

- Artificial Intelligence (AI) – It's not all that far out!
- Runaway Inflation – the top line and the bottom line
- Mega Projects – They will impact you
- Workforce demographics and shifting needs
- Mergers and Consolidation



NEW HORIZONS

F O U N D A T I O N

A Chance to Grow

Download the 2022 Futures Study





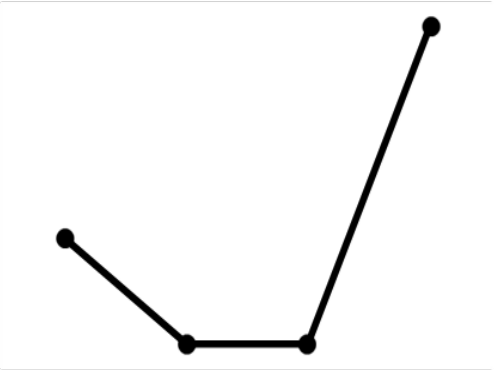
Appendix – 2006-2022 Trend Lines

- The following slides present a review of trend lines observed in the 2006, 2012, 2017 and 2022 Futures Studies.



FutureTrend Line Studies 2008-2022

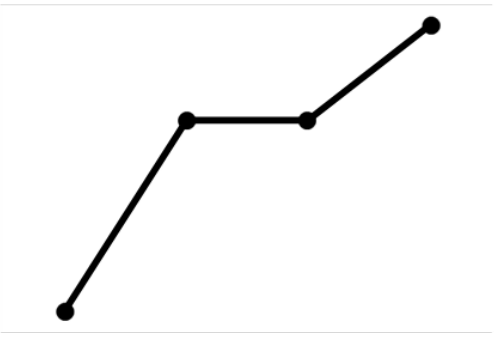
Prefabrication & Modular Building

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future								
Prefabrication and Modular Building	 A line graph with three data points. The first point is at a medium level, the second point is lower, and the third point is significantly higher than the first. The line connects these points in sequence. <table border="1"><caption>Line Graph Data</caption><thead><tr><th>Year</th><th>Relative Impact</th></tr></thead><tbody><tr><td>2008</td><td>Medium</td></tr><tr><td>2022</td><td>Low</td></tr><tr><td>2022 Outcome</td><td>High</td></tr></tbody></table>	Year	Relative Impact	2008	Medium	2022	Low	2022 Outcome	High	Prefabrication and modularization will continue to be at the forefront of the industry for the foreseeable future. Faced with labor shortages, compressed schedules, and price constraints, contractors will be compelled to innovate and deliver more with the same or fewer resources.
Year	Relative Impact									
2008	Medium									
2022	Low									
2022 Outcome	High									



Futures Studies Trend-Lines 2008-2022

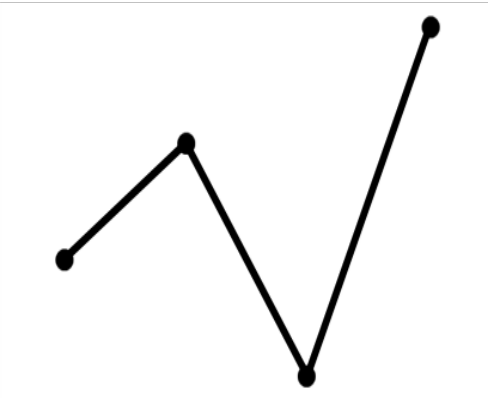
Solutions First

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future
“Solutions-First” Approach to Buying Construction Services		“Solutions-First” will continue to be a price-driven market with select verticals understanding the value of a collaborative approach to reduce the overall lifecycle cost of the facility.



Futures Studies Trend-Lines 2008-2022

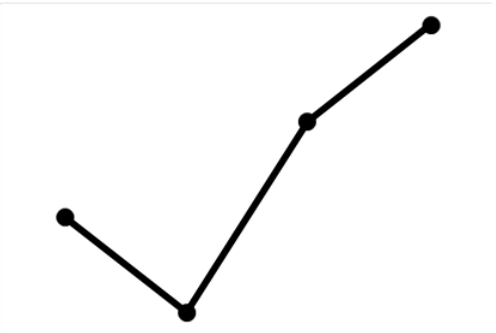
Energy Costs

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future
Energy Costs		Energy costs have significantly increased in all areas, in contrast to the forecasted likely future in the 2016 study. Oil prices will likely stabilize, but the current Presidential Administration's halt on pipeline projects will pressure natural gas prices.



Futures Studies Trend-Lines 2008-2022

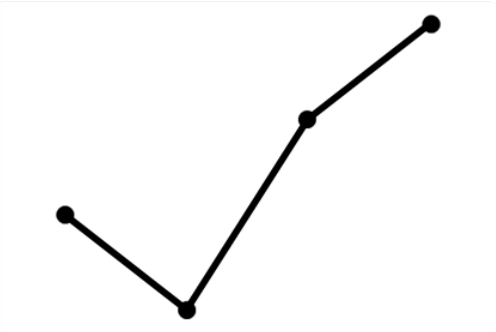
National Demand for HVAC Services

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future
National Demand for HVAC Services and Construction	 <p>The graph shows a line with three data points. The first point is at a medium level, the second point is lower, and the third point is higher than the first, indicating a dip followed by a rise.</p>	Increased government programs through targeted budget funding to promote home ownership, followed by commercial, healthcare, and other support facilities, will contribute to the expansion of the building sector. In addition, increasing building activities, infrastructural changes, and HVAC replacement and upgrades are among the primary factors contributing to the growth of the nation's HVAC services and construction markets.



Futures Studies Trend-Lines 2008-2022

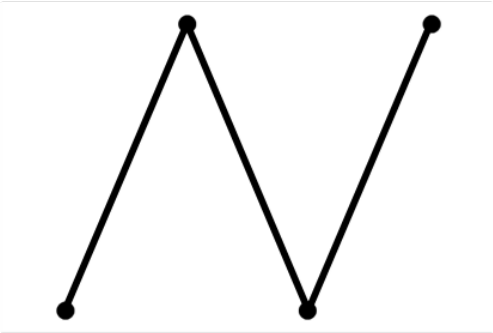
BIM Technology

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future
BIM Technology Penetration and Maturing	 <p>The graph shows a line with four data points. The first point is at a medium level, the second point is lower, and the third and fourth points are higher than the second, showing a sharp increase.</p>	<p>BIM will remain the go-to collaboration tool for trade coordination with REVIT as the market leader for the foreseeable future, with BIM's full capabilities predicted to be widely adopted. It will continue to evolve with the addition of 4D (Schedule) and 5D (Cost). The use of BIM Models for facility management has been irregular but will continue to evolve.</p>



Futures Studies Trend-Lines 2008-2022

Vertical Integration

Prior Studies Trends	2008-2022 Trend Relative Impact	2022 Outcome & Likely Future
Vertical Integration		Consolidation for scale is more likely than broad-based adoption of a vertical integration strategy. Large-scale failures like Katerra will yield lessons learned and provide pause. Supply chain issues resulting from COVID make it seem more likely for sector consolidation than contractors pursuing vertical integration.