

# Managing the Risk of Cost Escalation During Project Delivery

State of the Coast

June 1, 2023

# Agenda

- 1. Different Perspectives on the Risk of Cost Escalation**
  - 2. Example Analysis: Material and Construction Labor Cost Escalation and Equipment Lead Times**
  - 3. Options for Managing the Risk of Cost Escalation**
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# Different Perspectives on the Risk of Cost Escalation

Project Risk is defined as “the cumulative effect of the chances of uncertain occurrences which will adversely affect project objectives. It is the degree of exposure to negative events and their probable consequences. Project risk is characterized by three factors: risk event, risk probability and the amount at stake.”

- Project Management Institute



## Owner Perspective

“However, there may be circumstances where an accommodation can be reached by mutual agreement of the contracting parties, perhaps to address acute impacts on small business and other suppliers... such an accommodation may take the form of schedule relief or otherwise amending contractual requirements.”

- Clarification to DOD Guidance on Inflation and Economic Price Adjustments,  
September 9, 2022

- Bids received in 2022 have been 25% above Engineer's Estimates due to supply chain issues, volatility in construction material prices, labor shortages, and spike in fuel prices.
- Pricing not expected to improve in the near term, particularly for contracts involving materials such as steel, cement, asphalt, rock/rip rap, etc.

- CPRA Board Meeting, July 18, 2022



**US Army Corps  
of Engineers®**



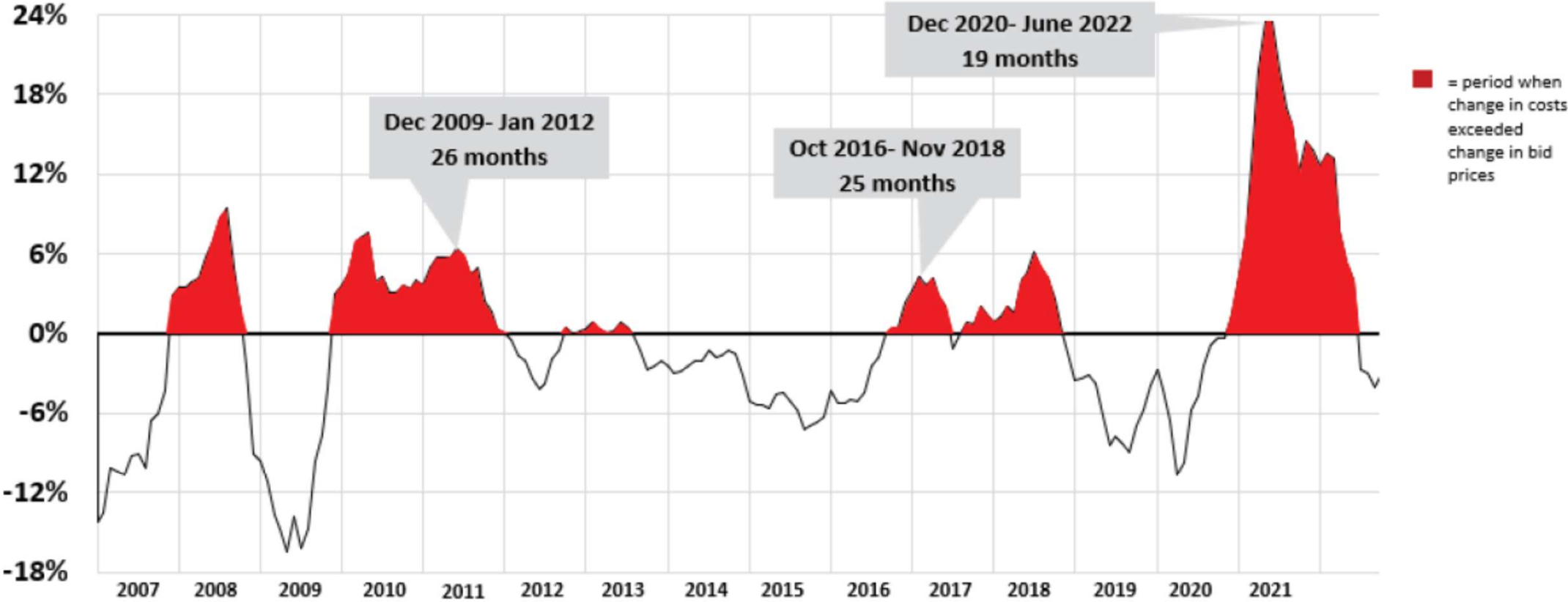
# Contractor Perspective – Historical Trends



Figure 3, AGC Inflation Alert, December 2022

**Cost squeeze on contractors can last two years or more**

Difference between year-over-year change in materials costs vs. bid prices, Jan 2007-Oct 2022



Source: Source: Bureau of Labor Statistics, [www.bls.gov/ppi](http://www.bls.gov/ppi), producer price indexes for goods inputs to nonresidential construction (material costs) and new school building construction (bid prices)

## A/E Perspective



Estimator (noun) – An individual who does precision guess-work based on unreliable data provided by those of questionable knowledge. See also Wizard, Magician, Gypsy Fortune-Teller

**Where Do We Go From Here?**



# Some Possible Sources of Information on Pricing Trends

- Engineering News Record (ENR)
- U.S. Bureau of Labor Statistics (BLS)
- U.S. Energy Information Administration (EIA)
- USACE Civil Works Construction Cost Index System (CWCCIS)
- RS Means
- Fels Management Institute (FMI)
- Associated General Contractors of America (AGC)
- Industrial Info Resources (IIR)
- Louisiana Workforce Commission
- EquipmentWatch
- Alpha Resources
- Oil Price Information Service (OPIS)
- Moody's Analytics



# **Example Analysis: Material and Construction Labor Cost Escalation and Equipment Lead Times**

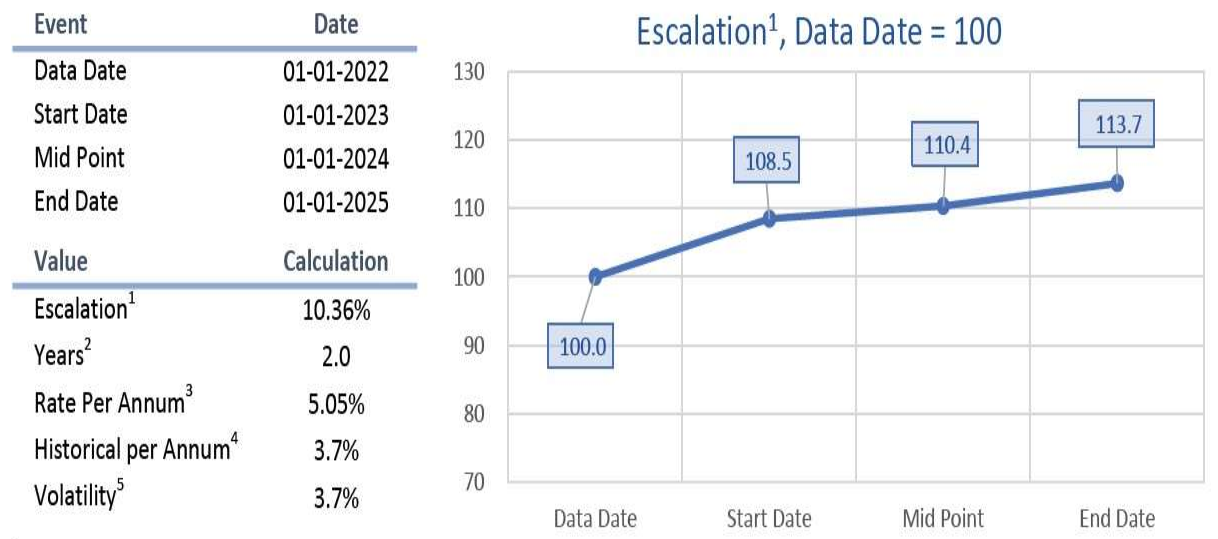
Data Source: IHS Markit & Jacobs Estimating Escalation Tool  
1Q 2023 Outlook



# Forecast Escalation & Pricing Index Model - Concrete

## Jacobs Cost Estimating - Escalation Calculation Report

Escalation report prepared:	15-01-2023
Escalation Model Used:	Custom - Commodity
Project:	Concrete Escalation 2022Q1 - 2025Q1



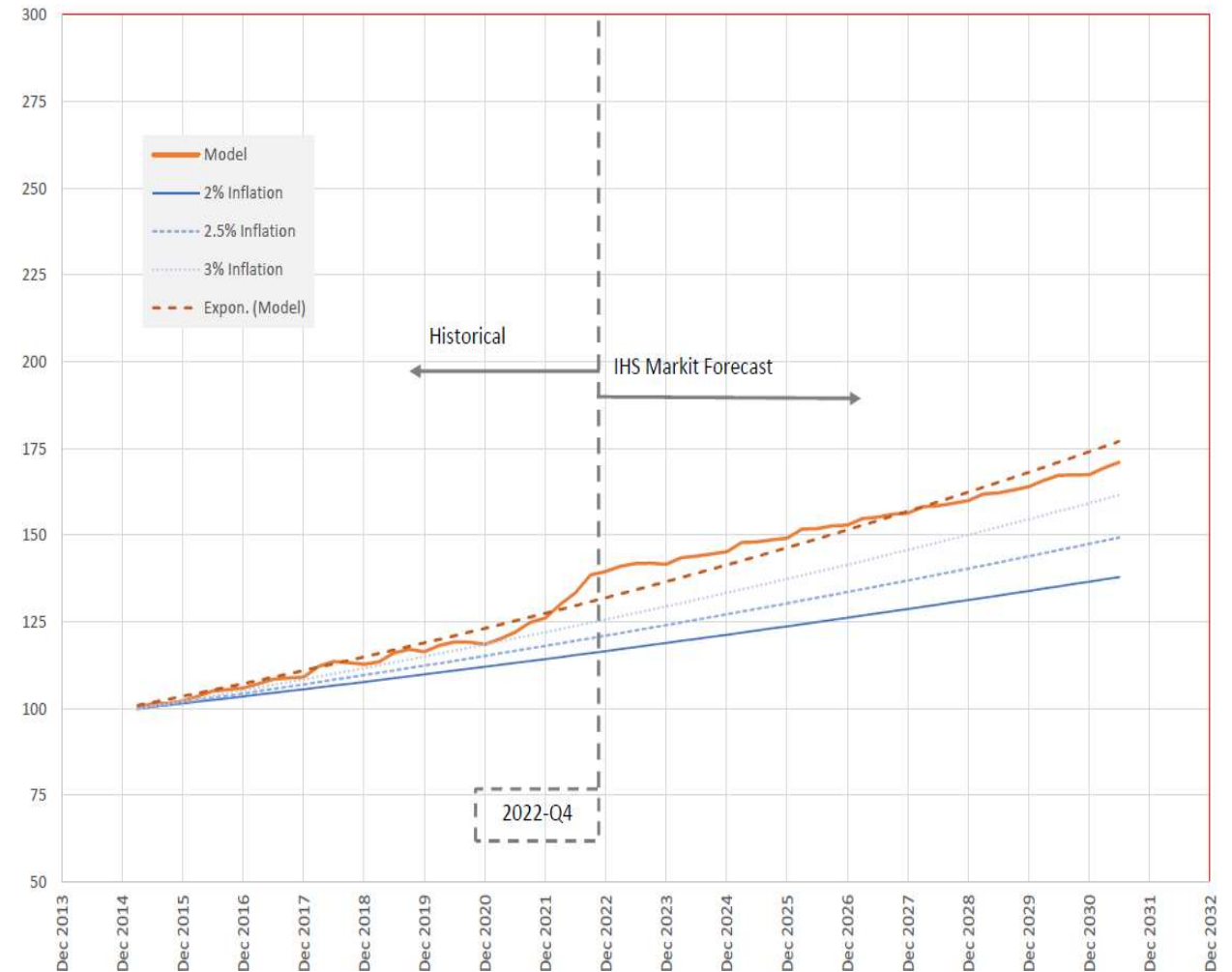
**Notes:**

- 1 - Escalation begins with the data date and assumes equal spending from project start to end dates
- 2 - Years is the duration from the Data (Estimate) date to the mid point of the project
- 3 - Rate Per Annum is the annual rate of escalation which when compounded over Years, equal Escalation
- 4 - Historical is the annual rate of escalation for the weighted model from 2015/Q1 to 2022/Q3
- 5 - Volatility is the std. deviation of the model's Historical annual rates of escalation, equivalent to a  $p=0.84$  value

Forecasts are based on data provided by IHS Markit though 2022-Q4 with model weighting as given below:

100% - PPI327320P.Q.FOS - USA, PPI, Ready-Mix Concrete

## Concrete - Quarterly Index Model, 2015Q1 = 100

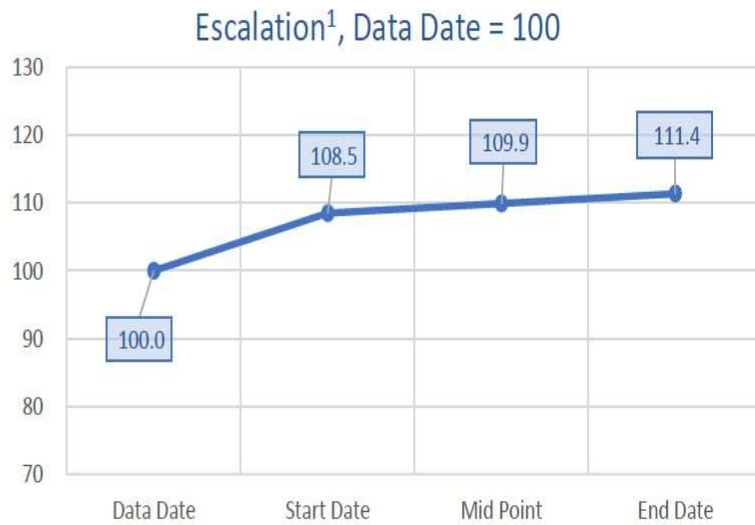


# Forecast Escalation & Pricing Index Model – Pumps

## Jacobs Cost Estimating - Escalation Calculation Report

Escalation report prepared:	15-01-2023
Escalation Model Used:	Custom - Commodity
Project:	Pumps Escalation 2022Q1 - 2025Q1

Event	Date
Data Date	01-01-2022
Start Date	01-01-2023
Mid Point	01-01-2024
End Date	01-01-2025
Value	Calculation
Escalation <sup>1</sup>	9.90%
Years <sup>2</sup>	2.0
Rate Per Annum <sup>3</sup>	4.83%
Historical per Annum <sup>4</sup>	2.8%
Volatility <sup>5</sup>	2.8%



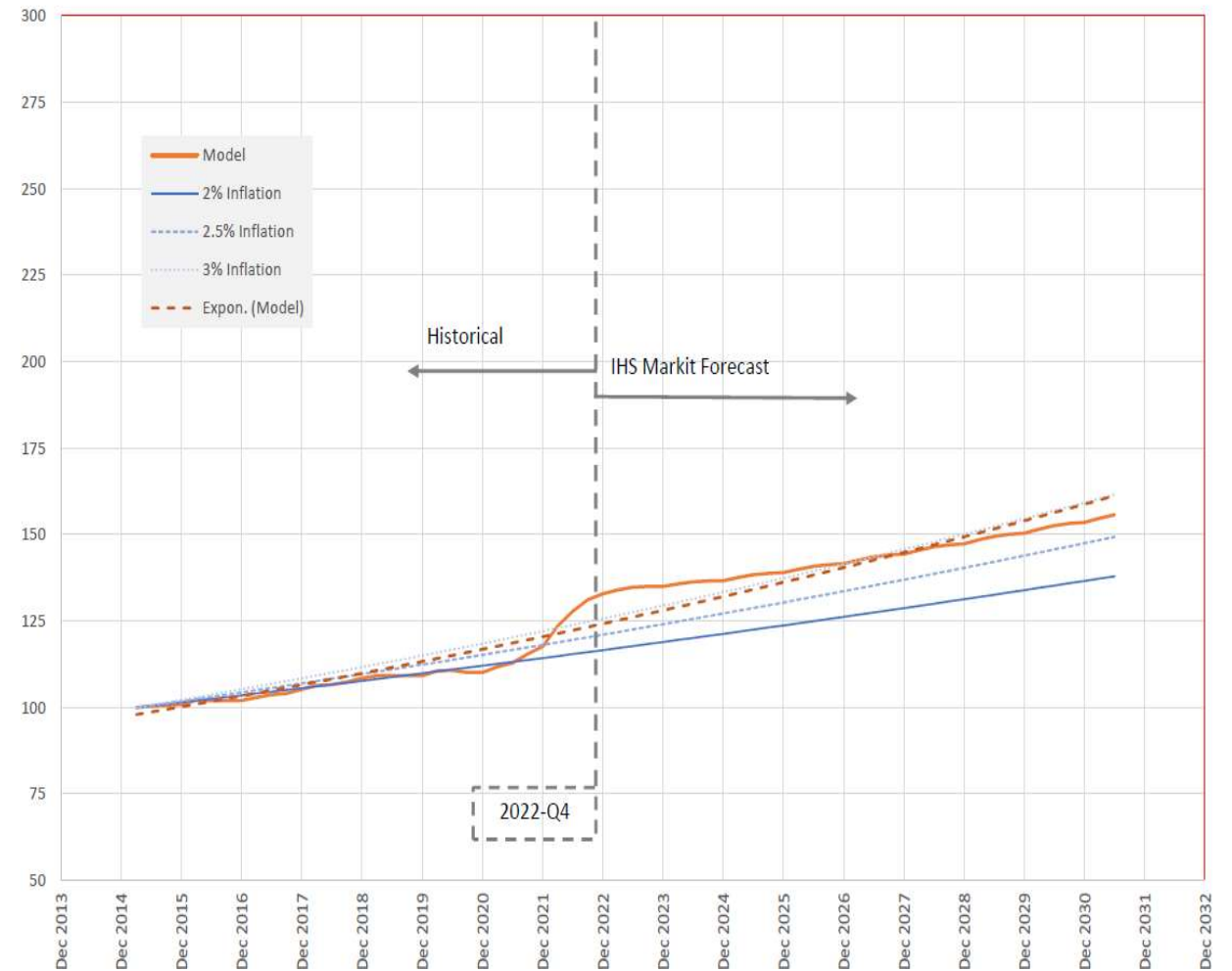
### Notes:

- 1 - Escalation begins with the data date and assumes equal spending from project start to end dates
- 2 - Years is the duration from the Data (Estimate) date to the mid point of the project
- 3 - Rate Per Annum is the annual rate of escalation which when compounded over Years, equal Escalation
- 4 - Historical is the annual rate of escalation for the weighted model from 2015/Q1 to 2022/Q3
- 5 - Volatility is the std. deviation of the model's Historical annual rates of escalation, equivalent to a  $p=0.84$  value

Forecasts are based on data provided by IHS Markit though 2022-Q4 with model weighting as given below:

100% - PPI333911.Q.FOS - USA, PPI, Pumps and Pumping Equipment

## Pumps - Quarterly Index Model, 2015Q1 = 100

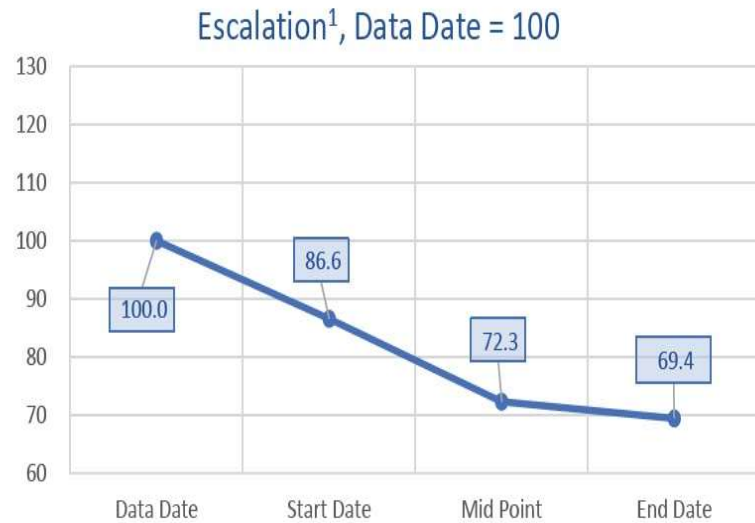


# Forecast Escalation & Pricing Index Model – Structural Steel

## Jacobs Cost Estimating - Escalation Calculation Report

Escalation report prepared:	15-01-2023
Escalation Model Used:	Custom - Commodity
Project:	Structural Steel Escalation 2022Q1 - 2025Q1

Event	Date
Data Date	01-01-2022
Start Date	01-01-2023
Mid Point	01-01-2024
End Date	01-01-2025
Value	Calculation
Escalation <sup>1</sup>	-27.72%
Years <sup>2</sup>	2.0
Rate Per Annum <sup>3</sup>	-14.98%
Historical per Annum <sup>4</sup>	10.2%
Volatility <sup>5</sup>	15.0%



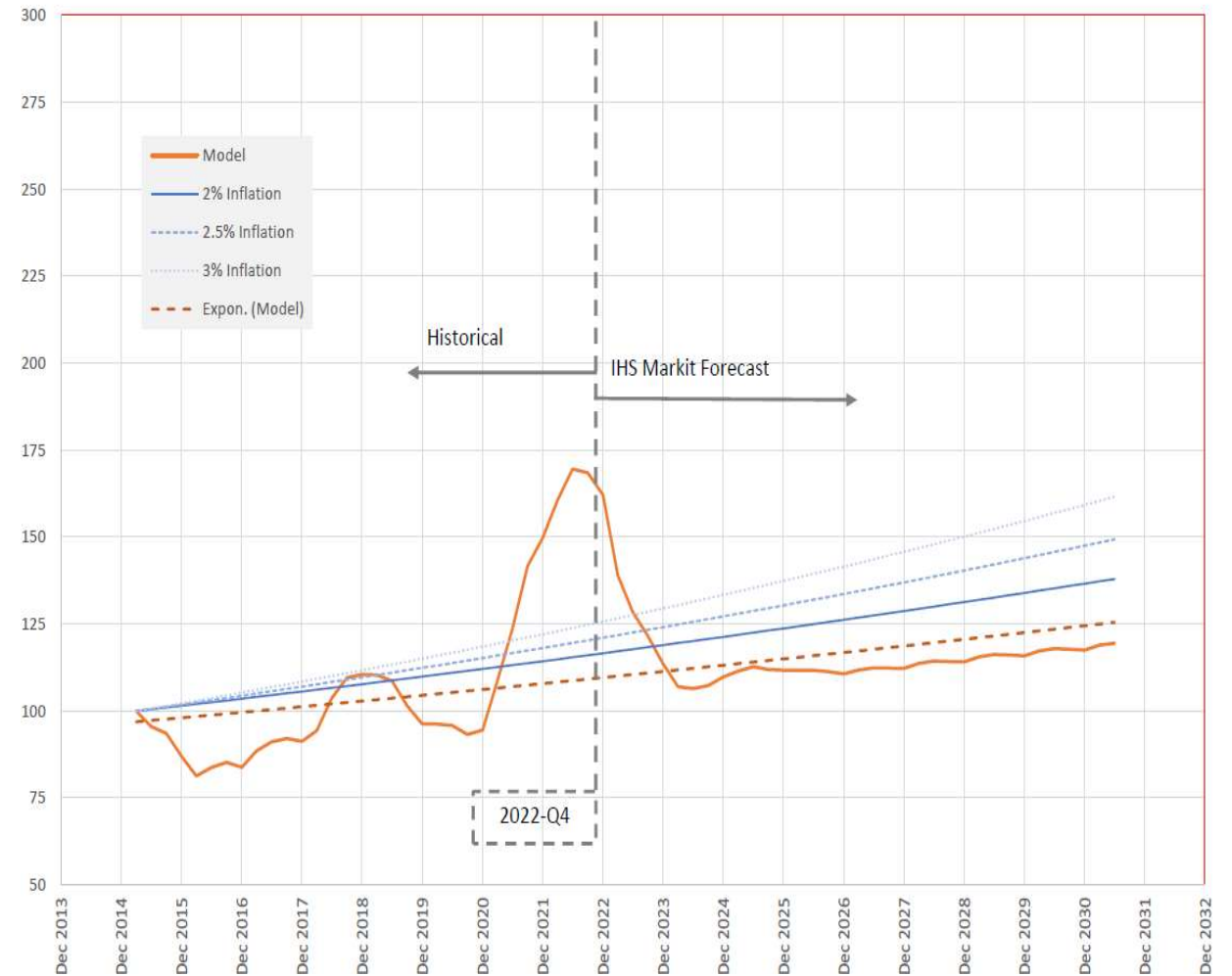
### Notes:

- 1 - Escalation begins with the data date and assumes equal spending from project start to end dates
- 2 - Years is the duration from the Data (Estimate) date to the mid point of the project
- 3 - Rate Per Annum is the annual rate of escalation which when compounded over Years, equal Escalation
- 4 - Historical is the annual rate of escalation for the weighted model from 2015/Q1 to 2022/Q3
- 5 - Volatility is the std. deviation of the model's Historical annual rates of escalation, equivalent to a  $p=0.84$  value

Forecasts are based on data provided by IHS Markit though 2022-Q4 with model weighting as given below:

100% - PPI3311107.Q.FOS - USA, PPI, Hot Rolled Bars Plates and Structural Shapes

## Structural Steel - Quarterly Index Model, 2015Q1 = 100



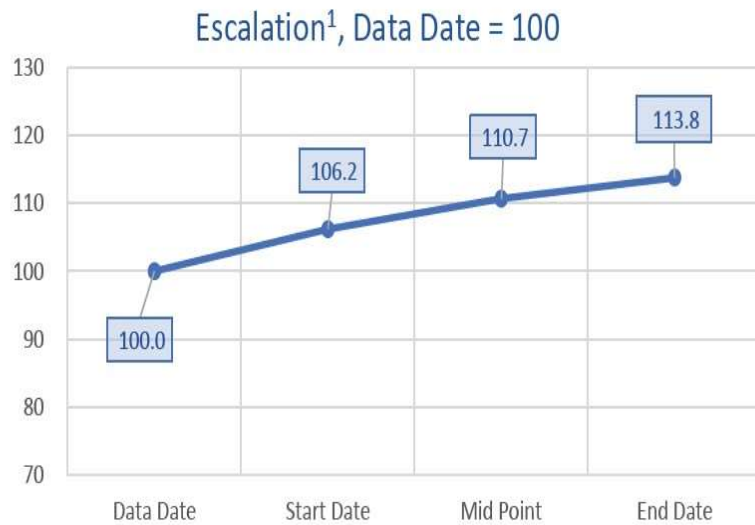


# Forecast Escalation & Pricing Index Model – Construction Labor

## Jacobs Cost Estimating - Escalation Calculation Report

Escalation report prepared:	15-01-2023
Escalation Model Used:	Custom - Commodity
Project:	Construction Labor Escalation 2022Q1 - 2025Q1

Event	Date
Data Date	01-01-2022
Start Date	01-01-2023
Mid Point	01-01-2024
End Date	01-01-2025
Value	Calculation
Escalation <sup>1</sup>	10.68%
Years <sup>2</sup>	2.0
Rate Per Annum <sup>3</sup>	5.21%
Historical per Annum <sup>4</sup>	3.4%
Volatility <sup>5</sup>	3.6%



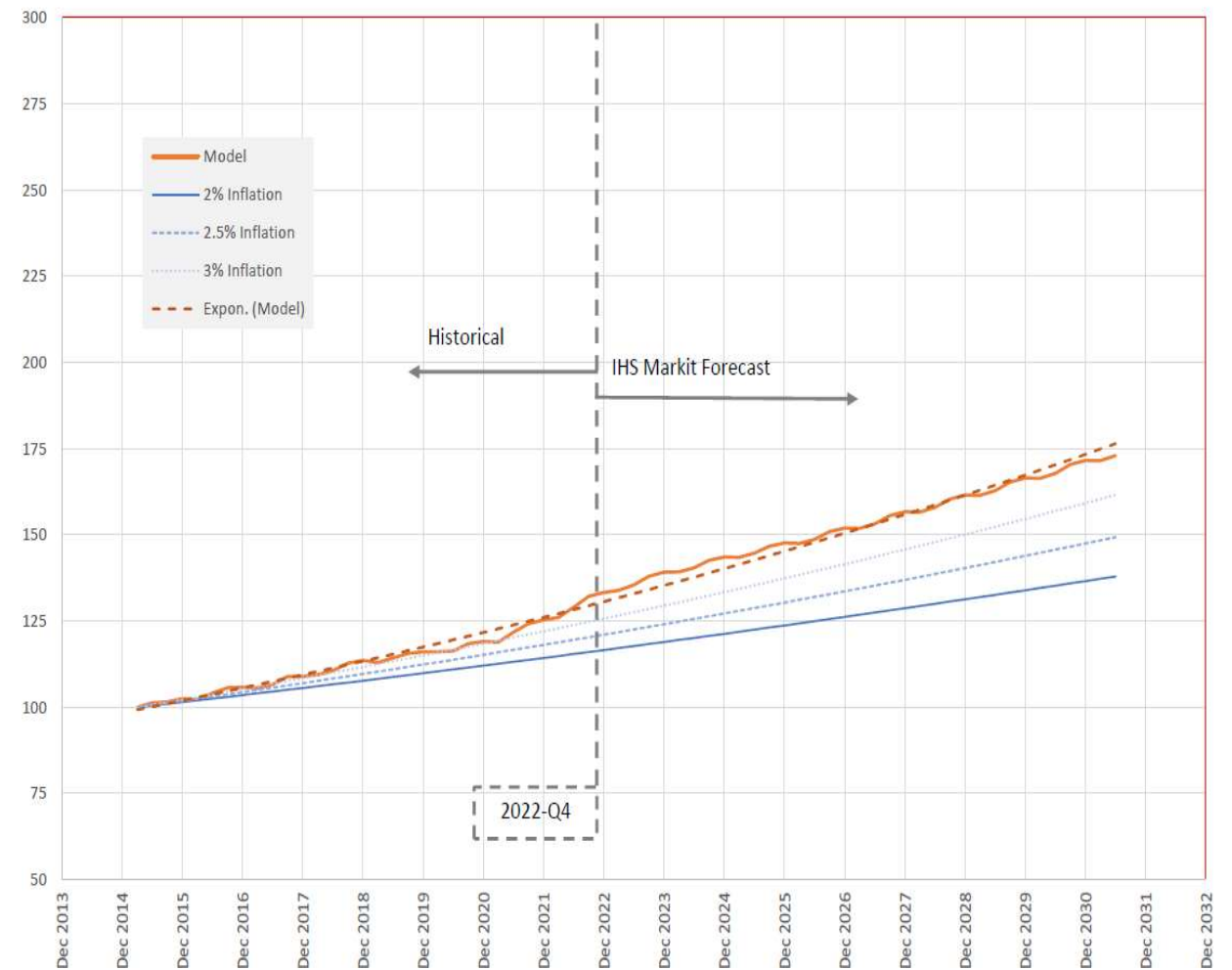
### Notes:

- 1 - Escalation begins with the data date and assumes equal spending from project start to end dates
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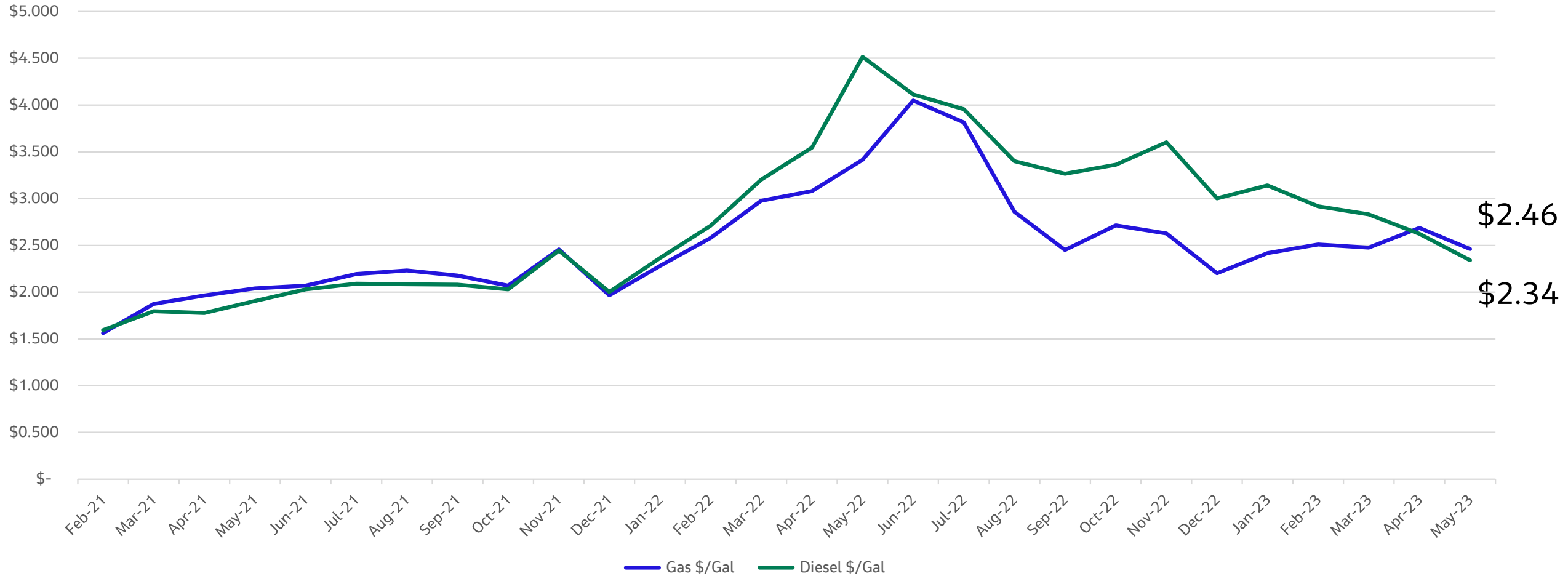
Forecasts are based on data provided by IHS Markit through 2022-Q4 with model weighting as given below:

100% - CEU2000000008.Q.FOS - USA, Average Hourly Earnings, Construction

## Construction Labor - Quarterly Index Model, 2015Q1 = 100



# LADOTD Monthly Index Prices for Fuel



Source: [http://wwwapps.dotd.la.gov/engineering/lettings/lac\\_price\\_index/priceindices.aspx](http://wwwapps.dotd.la.gov/engineering/lettings/lac_price_index/priceindices.aspx)

# Utility Equipment Lead Times

Equipment Description	Current Lead Time – Ex Works, Factory
Air Compressors	26-32 Weeks After Receipt of Order (ARO)
Air Handling Units (Custom / Process)	38-46 Weeks ARO
Boilers	26-30 Weeks ARO
Chillers	38-44 Weeks ARO
Cooling Towers	26-32 Weeks ARO
Emergency Generators	36-42 Weeks ARO
HVAC Heat Exchangers	28-34 Weeks ARO
HVAC Humidification Steam Generators	38-42 Weeks ARO
Makeup Air Handling Units (MAU)	26-32 Weeks ARO
Motor Control Centers	28-32 Weeks ARO
Substations	36-42 Weeks ARO
Switchgear	<b>55-80 Weeks ARO</b>
Transformers	38-46 Weeks ARO
Uninterrupted Power Supply System (UPS)	28-50 Weeks ARO
Water Pre-Treatment System (WPT)	42-46 Weeks ARO
Wastewater Treatment System (WWT)	38-44 Weeks ARO

# Options for Managing the Risk of Cost Escalation

Risk management can be defined as “the art and science of identifying, analyzing and responding to risk factors throughout the life of a project and in the best interest of its objectives.”

- Project Management Institute





## Price Adjustment Considerations:

- Volatility.
- Quantity.
- Ability to Mitigate Risks Using Other Means.
- Feasibility.
- Procurement Type and Guidelines.
- Management/Administrative Requirements.



## Options

1. Delay the Project Based on an Anticipated Future Drop in Pricing or Stabilization of Pricing in the Market
- 2A. Delay the Procurement of a Commodity/Service Based on an Anticipated Future Drop in Pricing or Stabilization of Pricing in the Market
- 2B. Procure a Commodity/Service as soon as Possible to “Lock-in” Pricing Before an Anticipated Future Increase in Pricing
3. Use a Price Adjustment Clause (PAC)



# Discussion





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Reinventing tomorrow.



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