

**Orange County Business Council
Orange County Transportation Infrastructure Construction
Cost Pressure Index
Fall 2024
Prepared for the Orange County Transportation Authority**

OCBC Research Team

Dr. Wallace Walrod – Chief Economic Advisor, Orange County Business Council
Dr. Marlon Boarnet – Professor and Director of the METRANS Transportation Consortium, University of Southern California

Background and Purpose

As a supplementary examination to the Next 10 Delivery Plan: Market Conditions Forecast and Risk Analysis study delivered by Orange County Business Council (OCBC) in September 2017, the Orange County Transportation Authority (OCTA) Board of Directors (Board) requested further study and exploration of potential cost fluctuations beyond existing cost analysis from the California Department of Transportation's (Caltrans) Construction Cost Index (CCI) and internal OCTA analysis. The OCTA Board requested an ongoing analysis of construction cost factors, with periodic updates. In response, the OCBC team developed the Orange County Transportation Infrastructure Construction Cost Pressure Index (ICCPI), which is updated every six months.

To develop the cost pressure index, the OCBC team analyzed annual trends in material costs, labor costs and general economic conditions to determine a range of potential cost increases with a time horizon that is typically three years into the future. The index updates begin by collecting relevant market data and indicators and then performing data analytics on to assess current cost pressure and forecast future cost pressure. In doing so, and providing these findings to OCTA's Board, more accurate budgets can be determined reducing the potential risk of cost pressure and project delivery slowdowns due to financial constraints. This September 2024 memo updates the March 2024 forecast of the Orange County Transportation ICCPI and provides annual cost pressure index forecasts for the remainder of 2024 and for 2025, 2026, and 2027.

Findings and Discussion

The most recent available input data were gathered to update the index. That includes second quarter 2024 data for the following index components: California's unemployment rate, California building permits, Caltrans index data on infrastructure construction materials costs as well as fourth quarter 2023 data on Orange County and Southern California construction industry wages. 2024 values for building permits and unemployment rates were estimated from changes from second quarter 2023 to second quarter 2024 and construction wages for 2023 from fourth quarter 2022 to fourth quarter 2023.

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Following the July 30-31 meeting of the Federal Reserve where rates were left unchanged, markets fully expect a September rate cut as the rate of inflation continues to show a decline and labor markets have continued to soften. Labor market concerns have been climbing especially with the recent revision to Bureau of Labor Statistics data which showed 818,000 fewer jobs added between March 2023 and March 2024 than previously estimated. In California, according to the California Employment Development Department as of July 2024, the non-seasonally adjusted unemployment rate has climbed to 5.8 percent well above the national rate of 4.5 percent and up from 4.8 percent in July 2023 as well as up from 5.3 percent measured in June 2024.¹ Despite the recent increase in wages, household debt continues to hit new highs, with credit card debt increasing 5.8 percent or by \$27 billion over the past year to \$1.14 trillion indicating consumer spending may begin to slow.² While economic and political uncertainty remain domestically, continued instability abroad from the Russia-Ukraine conflict and widening conflicts in the Middle East could further hamper economic growth and progress.

In the March 2024 update, the OCTA Construction Cost Pressure Index measured a reading of 2 for 2024 (annualized cost changes between 1 and 2 percent), followed by an index of 3 in 2025 (annualized cost changes between 2 and 6 percent) and then falling back to an index of 2 in 2026. Six months prior to that, the year-ago September 2023 Construction Cost Pressure Index predicted a construction cost change environment in 2023 of 3 (2 to 6 percent annualized increase) remaining steady at 3 in 2024 before declining to a 2 in 2025 (1 to 2 percent annual rate of change) and staying at a 2 through 2026.

The new estimate for September 2024 sees the index for 2024 dropping to a value of 2 for the remainder of the year, before climbing to 3 in 2025, and dropping to an index of 2 in 2026 and remaining steady at an index of 2 for 2027. At this point, the input components for the index show cross-currents. The macroeconomic conditions in California show signs of softening, with slowing building permits and a rising unemployment rate. At the same time, the most recent data on construction materials costs and wages show increases.

Comparisons of the 5 most recent Orange County Transportation ICCPI estimates are reflected in Table 1. The index values correspond to ranges of forecast annual infrastructure construction cost increases, as shown in Table 2.

¹ [https://labormarketinfo.edd.ca.gov/file/lfmonth/oran\\$pds.pdf](https://labormarketinfo.edd.ca.gov/file/lfmonth/oran$pds.pdf)

² <https://www.newyorkfed.org/microeconomics/hhdc>

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Table 1: September 2024 Update to Three-Year Orange County Transportation ICCPI, with comparison to March 2024, September 2023, March 2023, and September 2022 Index Estimates

Year	Index (September 2024) with Annual Cost Increase Range	Index (March 2024) with Annual Cost Increase Range	Index (September 2023) with Annual Cost Increase Range	Index (March 2023) with Annual Cost Increase Range	Index (September 2022) with Annual Cost Increase Range
2022	Not Estimated	Not Estimated	Not Estimated	Not Estimated	5 (11% to 40%)
2023	Not Estimated	Not Estimated	3 (2% to 6%)	4 (6% to 11%)	4 (6% to 11%)
2024	2 (1% to 2%)	2 (1% to 2%)	3 (2% to 6%)	4 (6% to 11%)	4 (6% to 11%)
2025	3 (2% to 6%)	3 (2% to 6%)	2 (1% to 2%)	3 (2% to 6%)	2 (1% to 2%)
2026	2 (1% to 2%)	2 (1% to 2%)	2 (1% to 2%)	Not Estimated	Not Estimated
2027	2 (1% to 2%)	Not Estimated	Not Estimated	Not Estimated	Not Estimated

Forecasting Method

OCBC used a series of regression analyses and forward-looking projections to create the ICCPI. The ICCPI provides a ranking from 0 to 5, with each rank corresponding to a range of percent changes in overall construction costs. These ranges are built to be forecasting tools, with scores indicating public construction forecast cost increase. Values of 2 and 3 indicate somewhat normal inflationary environments. A value of 4 is a high inflation environment. A value of 1 is a low inflation/deflationary environment. Values of 0 and 5 correspond to the most extreme conditions observed in Orange County over the past three decades, and hence the ranges for those values are wide due to the unusual nature of the highly deflationary environment that occurred immediately prior to and during the Great Recession and the high-cost inflation environment that occurred in the building boom years of the early 2000s and most recently in 2021 and 2022.

Table 2 highlights each ICCPI ranking and the proposed range of cost fluctuations which have been provided on a low, midpoint, and high scale.

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Table 2: OCBC Orange County ICCPI Index Values and Corresponding Forecast Annual Cost Increase Range

Index Value	Projected Annual Cost Increase, Low	Projected Annual Cost Increase, Midpoint	Projected Annual Cost Increase, High
0	-17%	-9.5%	-2%
1	-2%	-0.5%	1%
2	1%	1.5%	2%
3	2%	4%	6%
4	6%	8.5%	11%
5	11%	25.5%	40%

Methodology

To determine the Transportation ICCPI, the OCBC team started by aggregating several datasets, measures, and indicators on an annual basis as far back as 1972.

The index was built with the following key data inputs:

- California’s unemployment rate
- Building permits in California
- Selected construction materials costs for California, from Caltrans
- Orange County Construction Labor Costs

The OCBC team examined how the various measures and indicators of construction costs varied with changes and recent past trends in construction inflation. Using statistical analyses, the research team has built a forecasting model that projects forward cost increases and predicted cost increases are grouped into the categorical ranges shown in Table 2.

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Recent Data Trends

Table 3 shows the recent pattern for three key components of the construction cost pressure index. While building permits in California declined from 2018 to 2020, they jumped by 12.6 percent in 2021, and by 0.2 percent in 2022 before falling 7.1 percent to 111,221 in 2023. Using estimates based on the change in permits from 2nd quarter 2023 to 2nd quarter 2024, building permits are expected to fall by 15.6 percent to 93,888 in 2024. This forecasted decline can be attributed to the high interest rate environment which has served to cut housing demand due to affordability concerns. Based on the change in average unemployment rates from the 2nd quarter of 2023 to 2nd quarter of 2024, California’s unemployment rate is expected to total 5.3 percent in 2024, 0.5 percentage points higher than in 2023. Construction salaries in Orange County, estimated from 4th quarter 2022 to 4th quarter 2023, are expected to register a 6.5 percent increase, totaling \$94,003.

Table 3: Infrastructure Cost Correlates, Annual Percentage Changes, 2016-2024

Year	California Building Permits	% Change Year-on-Year	California Unemployment Rate	% Change Year-on-Year	OC Construction Labor Costs (Average Annual Wage)	% Change Year-on-Year
2016	102,350	4.2%	5.5%	-11.6%	\$67,179	3.8%
2017	114,780	12.1%	4.8%	-12.9%	\$71,474	6.4%
2018	113,502	-1.1%	4.2%	-12.0%	\$74,669	4.5%
2019	110,197	-2.9%	4.1%	-3.4%	\$77,288	3.5%
2020	106,075	-3.7%	10.3%	153%	\$81,460	5.4%
2021	119,436	12.6%	7.3%	-28.9%	\$84,170	3.3%
2022	119,667	0.2%	4.2%	-42.4%	\$88,265	4.9%
2023	111,221	-7.1%	4.8%	13.4%	\$94,003**	6.5%
2024*	93,888	-15.6%	5.3%	11.4%		

* Estimated from second quarter change, 2023 to 2024, converted to annualized estimate

**Estimated from fourth quarter change, 2022 to 2023, converted to annualized estimate

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The appendix shows annual changes in materials costs in recent years. The 2024 values are estimated using the percent change from Q2 2023 to Q2 2024, and hence represent an estimate that will be revised in the next 6-month update when additional data for later in 2024 becomes available. As of Q2 2024, some material costs have seen a sharp rise, with rates converted to an annual basis: PCC Pavement increased by 182.1 percent, Structural Steel by 99.3 percent, and Aggregate Base 97.6 percent. As of Q2 2024 (annualized) PCC Structure costs down 54.8 percent and Steel Bar is down 4.5 percent. With the cost of materials and labor showing recent increases combined with rising statewide unemployment and declining building permits, the macroeconomy is showing signs of softening.

Appendix: Changes in Infrastructure Materials Costs 2016-2024 (all values are percent year-on-year changes, 2024 values forecast from second quarter changes, 2023 to 2024)

Year	Aggregate	PCC Pavement	PCC Structure	Steel Structure	Steel Bar
2016	9.4%	8.6%	7.7%	26.3%	35.0%
2017	24.2%	106.8%	26.8%	-50.1%	-20.1%
2018	18.9%	25.9%	17.2%	-58.8%	9.4%
2019	4.6%	-11.1%	-4.2%	0.8%	53.4%
2020	14.9%	-20.5%	10.0%	-9.3%	-36.2%
2021	-27.5%	-19.8%	23.5%	5.0%	6.6%
2022	47.6%	60.5%	-3.1%	37.9%	28.8%
2023	8.4%	7.4%	52.3%	22.9%	-5.9%
2024*	97.6%	182.1%	-54.8%	99.3%	-4.5%

*The annual 2024 change in value represents the change between second quarter 2023 and second quarter 2024.