

City and County of Honolulu

HHCTCP Cost Escalation Forecast FY 2009-2019



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March 2009

DISCLAIMER & LIMITATIONS

PB has conducted research and employed analytical methodologies it deems appropriate to develop underlying assumptions and to prepare this report. This report contains certain forecasts concerning anticipated future events and such projections reflect various assumptions which are based on the best information available at the time of writing, but represent estimates of future conditions that are subject to change as economic and world conditions change. Many of these issues are beyond our ability to control or predict and the realization of any of them could have a material adverse effect on outcomes; however, we believe forward-looking statements contained in this report are reasonable given the information available. Note that, the majority of research and analysis was conducted in November and December of 2008. Updates have been conducted throughout the spring of 2009, but have in most cases focused on areas of significant change or volatility between November 2008 and March 2009.

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Introduction

In order to better estimate project costs in year of expenditure (YOE) dollars and refine financial modeling of the project, PB conducted a study to forecast the project-specific construction cost escalation. In conducting this study PB built from knowledge of the industry and relied on a number of third party resources including publicly available and subscription services. In addition, PB conducted a number of interviews with industry experts (materials suppliers, labor representatives, and contractors) to better understand the local construction economy. The following report includes a 11-year project-specific construction cost escalation forecast, a discussion of the underlying economic conditions which contribute to PB's forecasts, as well as the methodology used to develop the forecasts.

The study corridor for the Honolulu High Capacity Transit Corridor Project (HHCTCP) extends from Kapolei in the west to University of Hawaii, Manoa in the East. The north side (mauka) of the corridor is bounded by mountain ranges and the south side (makai) by the Pacific Ocean. The corridor is, at most, 4 miles wide because much of it is bounded by the Koolau and Waianae Mountain Ranges in the north and the Pacific Ocean in the south. Between Pearl City and 'Aiea the corridor's width is less than one mile.

The Fixed Guideway project is scheduled to begin construction in CY 2009 and be open for service along the complete 19 miles in CY 2019. The Airport Alternative will cover approximately 41 directional route miles, and 21 stations. The forecasts presented in this report are for the project as a whole and do not account for differences in construction scheduling or project composition between project segments.

Summary of Analysis and Results

While the current recession has changed the escalation environment at present, recovery and a resumption of global economic growth, when it occurs, is likely to be accompanied by a return to the upward pressure on commodity and thus construction prices. A forecast of cost escalation for each component was derived and is shown in Exhibits 1 and 2. No overall project forecast is given in this report, as individual component rates will be applied by the HHCTCP project team and financial planning teams when appropriate. These forecast growth rates are presented on a fiscal year (FY) basis (ending 30 June) to match the financial planning team's convention. All other numbers presented in this report are on a calendar year basis (CY), except where noted.

While forecast results are described in-depth in the Results and Methodology section, a summary description of the forecast for each component is provided below.

- **Labor** rates are fixed based on negotiated contracts. Higher rates in FY 2013 and FY 2018 are based on anticipated front-loading of contracts.
- **Steel** price growth in FY 2009 (anticipated to be approximately 8 percent) is largely due to steep price gains in the third quarter CY 2008. When averaged, price decreases in the fourth quarter CY 2008 and the first quarter of CY 2009, and growth of less than 1 percent in the second quarters of CY 2009 will not recover gains made early in FY 2009 when compared to the averaged FY 2008 price index. More analysis is presented later in this memo.
- **Concrete** forecasts are based on outlooks from concrete suppliers in the early years and will likely remain high as sand is currently difficult to obtain on O'ahu and is being imported from as far away as British Columbia. Additionally, there is only one importer of cement on O'ahu which lowers downward forces on pricing.
- **Other Materials** escalation is based on a general outlook for construction in Hawaii, O'ahu, and Honolulu. This outlook suggests a deeper and longer downturn for construction in Hawaii as tourism and construction financing are hurt by the current economic and financial downturns.
- **Construction Equipment** forecast is based on the PPI forecast for construction equipment obtained through subscription services to Moody's Economy.com. The PPI for construction machinery and equipment grew contrary to the economic downturn in the end of CY 2008

and beginning of CY 2009. From FY 2012 on, based on market research, PB adjusted the Moody's forecast as follows – escalation in FY 2012 and FY 2013 is expected to be somewhat elevated in response to demand from stimulus spending; and from FY 2014 on PB expects construction equipment cost escalation to be approximately 1 percent higher than that forecast by Moody's.

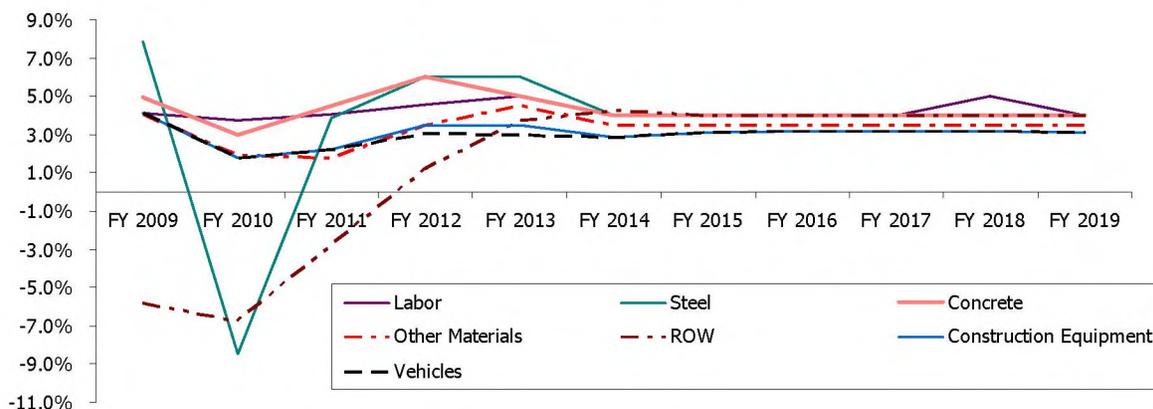
- **Right of way** is based on forecasts of property values on O’ahu and exhibit a deep downturn through FY 2011.
- **Vehicles** are forecast using construction equipment PPI as a direct proxy because specifics on the procurement strategy were not available at the time of writing. As stated above, PB feels Moody's forecast is too low from FY 2012 on and has adjusted the Moody's forecast resulting in an escalation rate at or around 3 percent from FY 2012 on.
- **Professional services** are anticipated to follow CPI and are estimated here using the CPI assumptions provided from the financial feasibility model.
- In general and across many components, infrastructure spending based **stimulus packages**, which are already disbursed and/or planned in the US and other regions (such as China and the European Union), will likely have some upward pressure on construction prices into FY 2012 and FY 2013.

Exhibits 1 and 2 below present the forecast growth rates by component. A description of the methodology and analysis used to derive these forecasts is included in the "Methodology and Results" section at the end of this report. Additionally, more detail on the underlying economics and analysis is presented throughout this report.

Exhibit 1: HHCTCP-Specific Cost Escalation Forecast (Table)

Fiscal Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Labor	4.2%	3.7%	4.1%	4.6%	5.0%	4.0%	4.0%	4.0%	4.0%	5.0%	4.0%
Steel	7.9%	-8.5%	3.9%	6.0%	6.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Concrete	5.0%	3.0%	4.5%	6.0%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Other Materials	4.1%	1.9%	1.8%	3.5%	4.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
ROW	-5.8%	-6.8%	-2.8%	1.2%	3.7%	4.2%	4.0%	4.0%	4.0%	4.0%	4.0%
Construction Equipment	4.2%	1.8%	2.2%	3.5%	3.5%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
Vehicles	4.2%	1.8%	2.2%	3.0%	3.0%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
Professional Services	1.2%	1.5%	2.0%	2.3%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

Exhibit 2: HHCTCP-Specific Cost Escalation Forecast (Chart)

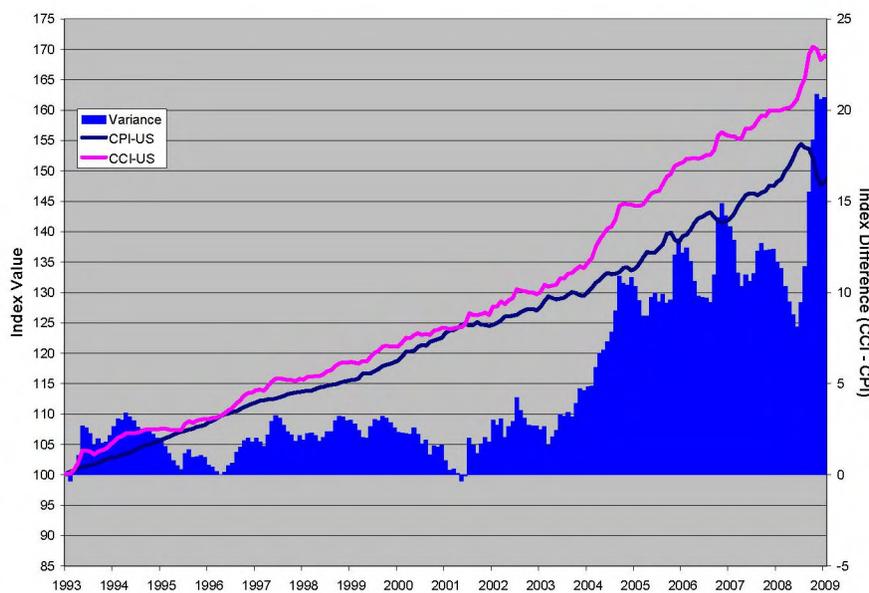


Overview of the Construction Economy

Global and National

Until approximately 2002, construction cost escalation had a stable linear growth trend which was in line with general inflation as measured by the Consumer Price Index (CPI). Since 2002, the variance between construction cost escalation and general CPI inflation (as shown in Exhibit 3¹), has significantly increased. This divergence between general inflation and construction cost escalation has been driven largely (although not entirely) by volatile growth in key global commodity prices, particularly oil and steel. Indeed, November 2008 through January 2009 saw the biggest widening in the variance, due in part to the run up in steel and fuel prices, which lagged declines in overall inflation – symptoms of the drop off in economic activity already setting in as a result of the mounting world financial crisis.

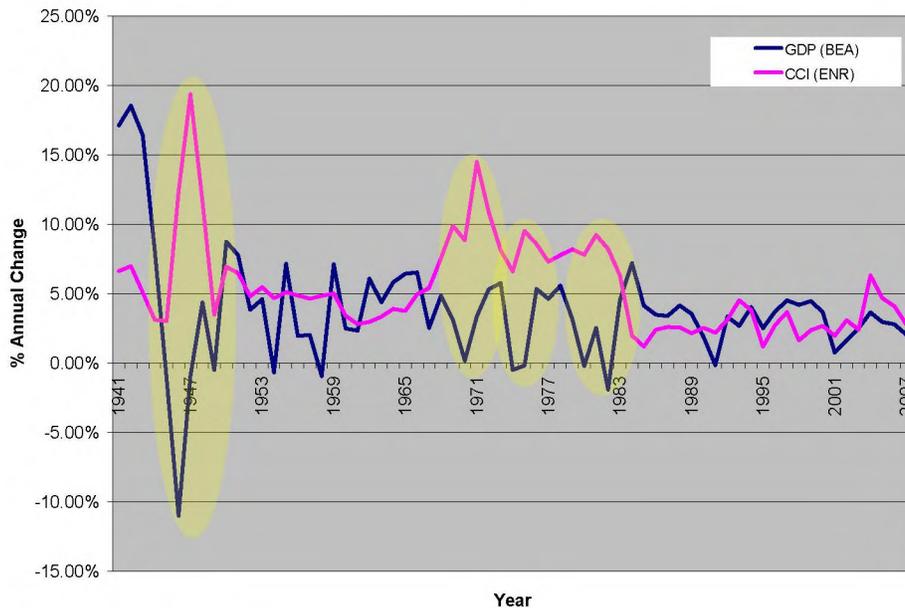
Exhibit 3: Consumer Price Index (CPI), Construction Cost Index (CCI), and variance between the two from January 1993- March 2009



Historically, recessionary times lead to increased infrastructure spending. During a downturn, the federal government has sought to bolster aggregate demand by public works spending, stimulating economic growth. Exhibit 4 illustrates this concept, with recessionary periods highlighted in yellow, showing a negative correlation between change in GDP (indicative of a recession) and CCI (indicative of construction cost inflation). Of course, this behavior is highly driven by policy and politics, and there is no guarantee that in the future this pattern would hold, especially as overall economic and fiscal conditions may make counter cyclical spending difficult. It is anticipated that stimulus packages in the next year or two will have only mild impacts on construction cost inflation. This topic is discussed further later in this memo.

¹ Source: Economic Forecasting Review (EFR) V3 Issue 1, CPI (from Bureau of Labor Statistics), CCI (from ENR)

Exhibit 4: Correlation between GDP and CCI from 1941-2007



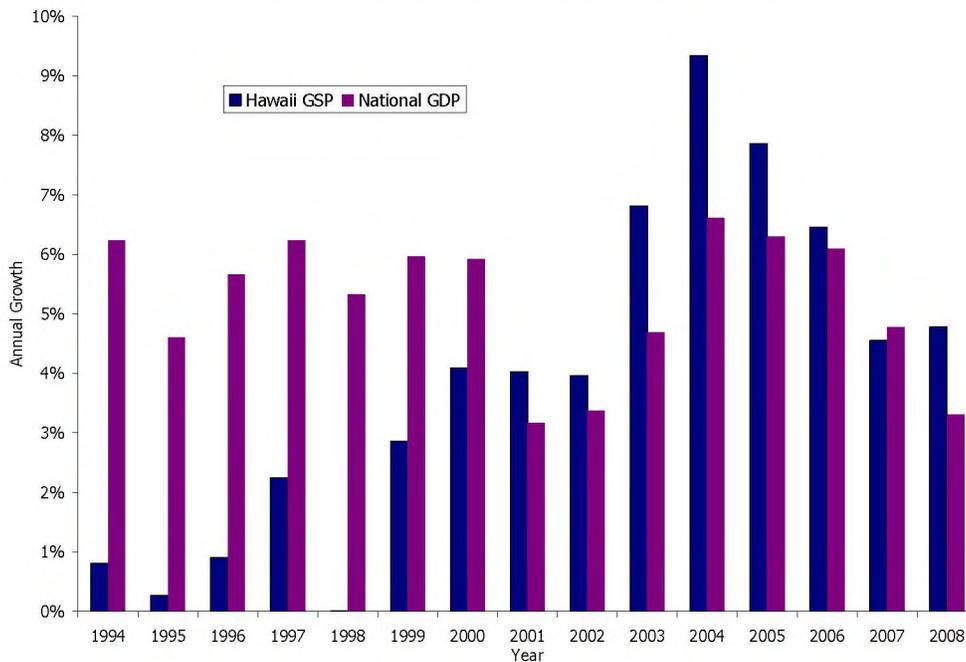
Source: CPI (BLS.gov)
CCI (ENR.com)

Hawaii

The State of Hawaii as a whole has seen strong growth in both tourist arrivals (strongly linked to the overall economy) and housing prices thus far this decade. These trends have changed recently as Hawaii, along with the US as a whole have moved into a recession. Median home prices are expected to fall by approximately 3.5 percent for CY 2008. This trend is predicted by the University of Hawaii Economic Research Organization (UHERO) to continue or worsen through CY 2009.² Additionally, based on PB’s GET forecasts, visitor expenditures will likely fall by about 9 percent in CY 2009. For most of the 1990’s, Hawaii’s gross state product (GSP) grew more slowly than the US national gross domestic product (GDP). Starting in 2000, Hawaii’s GSP grew faster than national GDP and reached almost 10 percent growth in 2004.

² University of Hawaii Economic Research Organization, *Quarterly Hawaii Forecast Update* (21 November 2008) and *Annual Hawaii Construction Forecast* (5 September 2008)

Exhibit 5: Hawaii GSP vs. National GDP (Nominal)



Construction represents a significant portion of the state economy and represents approximately 6 percent of employment, but is dwarfed by government jobs (20 percent) and accommodations and food service (16 percent).³ The construction industry has been declining in response to the bursting of the housing bubble, general economic downturns, and tightness in the credit markets. Most construction indicators, as reported and forecast by UHERO, have fallen in 2008 and are forecast to continue to fall through 2010 and 2011.⁴ Real contracting tax base (a close proxy for construction activity) is forecast to fall 3.73 percent in 2008, fall 19.43 percent in 2009, fall 10.31 percent in 2010, and fall 1.98 percent in 2011.⁵ This activity may be buoyed somewhat by military, government, and institutional spending, as is discussed later in this report.

Key Factors Affecting the Construction Sector

The following events have been the primary drivers affecting the construction sector, bringing it to its current state of uncertainty.

The global credit crunch: As major mortgage-backed losses in the end of 2007 gave way to bankruptcies and government bailout packages by the end of 2008, credit has essentially dried up. As banks move to protect their capital positions, loans have been difficult to come by resulting in an uncertain situation for both private and public construction. In order for the construction sector to begin to get back on track, governments around the world will have to take some action to help capital begin flowing again regardless of future prices or demand for services. Recent discussions in China and the US point towards possible economic stimulus packages in the form of major public infrastructure spending.

³ University of Hawaii Economic Research Organization, *The State of Hawaii at a Glance*, Accessed 15 December 2008.

⁴ University of Hawaii Economic Research Organization, *Annual Hawaii Construction Forecast Update*, 6 March 2008

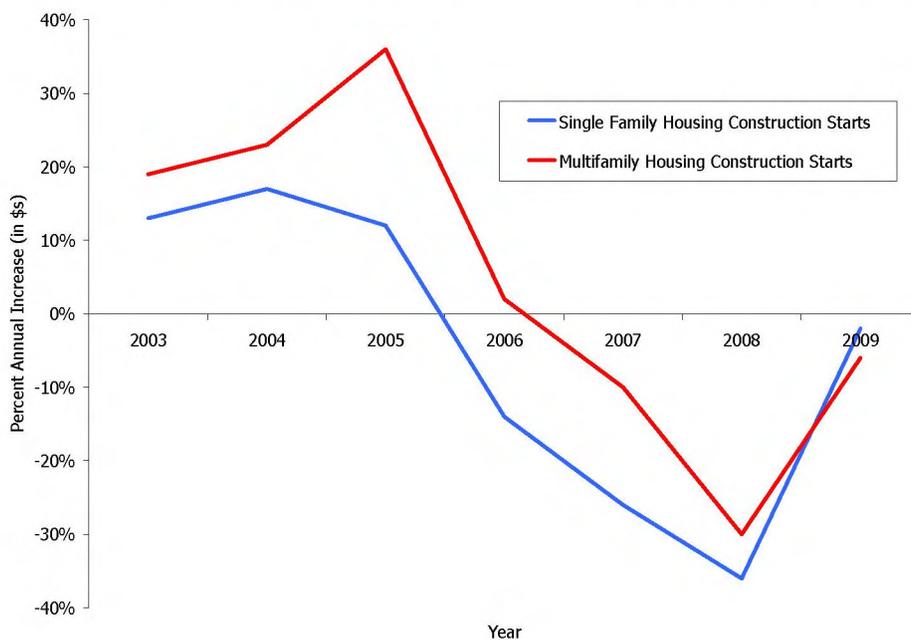
⁵ University of Hawaii Economic Research Organization, *Annual Hawaii Construction Forecast Update*, 6 March 2008

The credit crunch may impact construction trends in Hawaii to greater degree than elsewhere in the US, as much of the condominium and non-residential construction is driven by the tourism sector. Not only will credit tightness prevent financing of such projects, the downturn in the global economy and access to consumer credit will, and has, curbed tourism prospects.

The US housing bubble burst: With the residential housing market leading the way of the economy's dive into a recession, residential construction has been one of the hardest and fastest hit industries. Over the past year, home foreclosures have soared while home values have dropped. In October 2008, the residential construction market sank to its lowest point in 50 years⁶ while the Commerce Department reported a 4.5 percent drop in the construction of new homes. Regardless of any Government action to keep individuals in their homes as the market stabilizes, residential construction is unlikely to return to its pre-2007 activity. Exhibit 6 shows the annual increase in residential construction starts from 2003 through 2009.

The 2009 national outlook is positive overall, with single family housing starts projected to be down only 2 percent in dollars, compared to more severe drops seen in 2007 and 2008.⁷ Multifamily housing is expected to be down 6 percent in 2009, with rising unemployment and frozen credit markets primarily to blame. These "boosts" in 2009 are partially a result of the stabilization of mortgage giants Fannie Mae and Freddie Mac. Hawaii has experienced a similar bursting of the housing bubble as much of the rest of the country. Single family housing and condominium resale units fell 22 percent and 27 percent in 2006 and fell 9 percent and 15 percent in 2007, respectively. While growth in residential prices continued or remained flat in 2007, growth was less than the nearly 30 percent growth in the mid 2000s.⁸

Exhibit 6: Percent Annual Increase in Residential Construction Starts (\$s)⁹



⁶ Zibel, Alan. "US home construction sinks to new record low". *Associated Press*. <http://www.google.com/hostednews/ap/article/ALeqM5hR39t6No8iR1-y3sNcYe3effD78wD94I5QH82>

⁷ McGraw-Hill Construction Outlook 2009

⁸ University of Hawaii Economic Research Organization, <http://uhero.prognoz.com>, 9 December 2008.

⁹ McGraw-Hill Construction Outlook 2009

High commodity prices: From the middle of 2007 through the middle of 2008, major construction commodities including fuel and oil were at record high prices. Recently, driven by the downturn in the global economy, commodity prices have once again begun to fall. Commodity prices, particularly steel, have continued to fall through Q1 2009.

Stimulus Packages for Public Works

United States: As part of the American Recovery and Reinvestment Act (ARRA), there has been significant funding included for infrastructure investments. A total of upwards of \$125 billion has been included for infrastructure, including almost \$50 billion above baseline spending for transportation projects. Additionally, states are considering their own economic stimulus packages to jump-start their economies: "more than half a dozen [states] have passed or proposed their own economic stimulus packages designed to reinvigorate local businesses with new construction..."¹⁰

On a federal level, highway funding apportioned to Hawaii as part of the ARRA total approximately \$125 million.¹¹ Transit funding apportioned by FTA total approximately \$40 million.¹²

Emerging National Economies: while the GDP growth of emerging economies is expected to slow from just over 9 percent in 2007 to 7 percent in 2009, this is still considerably higher than the GDP growth expected in advanced economies of 0.5 percent.¹³ The high GDP growth is accompanied by higher construction expenditures in the non-building sectors. Infrastructure spending in all emerging markets is expected to increase from \$1.25 trillion to \$2.25 trillion per year over the next three years.¹⁴ This has created a greater demand for materials such as steel and cement as well as labor and construction machinery.

China has most recently announced an economic stimulus package, saying it would spend an estimated \$586 billion over the next two years on new rail, subway, and airports, as well as rebuilding communities that were hit by the earthquake in May of 2008. This is the largest economic stimulus effort undertaken by China. To support this initiative, the Chinese Government is loosening credit and encouraging state-owned banks to lend as part of a more "proactive fiscal policy." The planned package will cover 10 areas: low-income housing, electricity, water, rural infrastructure, projects aimed at environmental protection, and technological innovation. Eighteen billion dollars is scheduled for the last quarter of this year (immediate spending).

Across the UAE and Saudi Arabia, petroleum-based investments in commercial and residential construction have been rapidly increasing. A.T. Kearney's recent Real Estate Opportunity Index reports the top 50 emerging markets spent an estimated \$1.7 trillion on construction in 2007 with a compound annual growth rate (CAGR) of approximately 6 percent. While the UAE has been in the middle of the boom, cities such as Abu Dhabi, where the focus has been in real estate, will soon need to modernize their infrastructures and office space.¹⁵ Overall, the Middle East's real estate industry is better off than the US which may serve as an attractive area for foreign investors. As the US and Europe take a year or more to get back on track, the Middle East could serve as a welcome area for construction investment.

¹⁰ Data Digest. November 2008. "Forecasts predict 09 construction slump; state receipts sag but stimulus plans grow." <http://newsletters.agc.org/datadigest/2008/11/14/forecasts-predict-09-construction-slump-state-receipts-sag-but-stimulus-plans-grow/#more-138> (Original Source: www.Stateline.org)

¹¹ APPORTIONMENT OF HIGHWAY INFRASTRUCTURE INVESTMENT FUNDS PURSUANT TO THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009, PUBLIC LAW NUMBER 111-5, FHWA, http://pbstimulus.com/pdfs/reports_docs/fhwa_apportionments.pdf. 2 March 2009.

¹² FTA ARRA Apportionment Notice, http://www.pbstimulus.com/pdfs/reports_docs/fta_apportionment_notice.pdf, 5 March 2009.

¹³ International Monetary Fund, World Economic Outlook, October 2008

¹⁴ <http://seekingalpha.com/article/84309-emerging-market-infrastructure-spending-to-surge-merrill-lynch>

¹⁵ Saudi Gazette Staff. "Kingdom top in Middle East construction spending index." *Saudi Gazette*. <http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentID=200805136263>

As more information about stimulus spending has become available, it appears that funds will not run into the economy as soon as anticipated and impacts will likely lag somewhat. As a result, PB anticipates elevated escalation rates in FY 2012 and FY 2013 due to increases in demand from stimulus spending, which is somewhat later than was expected late in 2008.

Construction Industry Short-term Outlook

Exhibit 7 shows major industry sources' forecasts for the construction sector in 2009.

Exhibit 7: Construction Industry Activity Data and Forecasts for 2008 and 2009¹⁶

	2008	2009
McGraw-Hill, "construction starts"	-12.4%	-7.4%
US Dept of Commerce, "total new construction put-in-place"	-6.3%	-7.5%
FMI Corp. "total construction work"		-7.4%

Note: These figures represent measures of construction activity on a nation-wide basis and are not a measure of cost escalation.

A general consensus shows these sources mostly agree on an approximate 7 percent decline in construction activity in 2009. Despite the overall drop expected, the following individual sectors will see some changes unique to their markets. While residential construction activity will likely fall again, the power sector, for example, will likely experience an increase in construction in 2009, following a boom in 2008.

Residential Construction

In 2008, ENR forecasts that residential building (in dollar terms) will be down 35 percent compared to 23 percent in 2007. New starts of residential construction will likely continue to fall in 2009. Though McGraw-Hill forecasts a more "optimistic" scenario for the residential construction sector with new starts experiencing a 2-6 percent drop in 2009, the National Association of Home Builders is projecting another 16.2 percent drop in housing starts for the year in 2009.¹⁷

This shock in 2008 (which will likely continue into 2009) is a result of a number of factors. In addition to a poor credit market and a correction in real estate prices, residential construction over the past five years has exceeded demand. In other words, supply (new homes) needs to slow while demand catches up. Overall, consensus suggests that residential construction has been (and will be) the most severely and negatively affected part of the industry.

Hawaii has seen similar drops in the housing market to the rest of the nation with home prices falling steadily through 2008.¹⁸ This trend will likely impact transferable resources like concrete and, to some extent, laborers whose skills will be transferable to the heavy construction industry.

¹⁶ Saudi Gazette Staff. "Kingdom top in Middle East construction spending index." *Saudi Gazette*. <http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentID=200805136263>

¹⁷ Data Digest. November 2008. "Forecasts predict 09 construction slump; state receipts sag but stimulus plans grow." <http://newsletters.agc.org/datadigest/2008/11/14/forecasts-predict-09-construction-slump-state-receipts-sag-but-stimulus-plans-grow/#more-138>

¹⁸ UHERO, Historic Real Estate Price Tables, <http://uhero.prognoz.com/Graph.aspx?serie=4873>, 10 December 2008

Non-Residential Construction

Non-residential construction includes all activity not related to housing or other residential construction and as a whole, is expected to rise 4 percent in 2008.¹⁹ This increase is tempered by the diminished activity from the retail sector and in office commercial building. Its overall positive increase is partially a result of four major US oil refinery expansions slated to commence in 2009.

Commercial Buildings

Given that commercial construction is driven in large part by the overall health of the retail sector, the general health of the economy will have a large part in the commercial construction industry's future. Given the economy's downturn, many retail establishments are going out of business or cutting back expenditures. This situation creates a poorer environment for the market.

For 2008, on a square foot basis, commercial building construction is expected to drop 21 percent, driven primarily by the slowdown for stores and warehouses. New starts for 2009 in the retail sector are expected to fall an additional 15 percent on a square foot basis, and expected to decrease 12 percent (on a dollar basis).²⁰ Meanwhile new office space construction likely will decrease 17 percent on a square foot basis in 2008 and is projected to decrease 18 percent in 2009.²¹ The overall commercial sector shows a forecast improvement in 2009 over 2008, assuming that credit begins to move again, albeit slowly.

Large commercial and tourist-related construction has slowed substantially in Hawaii as a result of tightening credit markets reducing financing availability for projects and global economic downturns reducing tourist demand. Visitor arrivals are predicted to be down over 10.8 percent (year-over-year) in 2008, to fall an additional 5.7 percent in 2010, and recover to a rate of growth of 6.6 percent in 2010, as predicted by the UHERO.²²

In response to this downturn in the economy and financial markets most tourist-related construction projects have stalled. The only major ongoing project which was cited in industry interview was Disney's 800-unit resort planned in the Ko Olina area. It is anticipated that the first units will open sometime in 2011.²³

Construction of Institutional Buildings and Public Works

This sector is generally more stable in nature, as opposed to commercial and residential construction. Institutional building new starts are expected to remain essentially flat over 2008 while decreasing 6 percent in 2009 (in square feet), as municipalities and states make across-the-board spending cuts. This sector is most affected by diminished tax receipts for sponsoring governments and the frozen credit markets make municipal debt more expensive and more difficult to obtain.

Overall, despite the general health of the economy, transportation appropriations for the federal-aid highway program increased 5 percent in 2008 over 2007. Funding for mass transit projects increased 5 percent as well. However, 2008 saw an overall 5 percent drop in public works construction, with a 3 percent slip in highway and bridge construction.

Though there exist potential new sources for transportation funding in 2009, overall, construction in public works is expected to fall another 5 percent in 2009. Funding constraints will likely overshadow the federal government's efforts to bolster spending in transportation infrastructure.²⁴

¹⁹ McGraw-Hill Construction Outlook 2009

²⁰ McGraw-Hill Construction Outlook 2009

²¹ McGraw-Hill Construction Outlook 2009

²² UHERO, *Quarterly Hawaii's Forecast Update*, 21 November 2008

²³ Press Release, http://corporate.disney.go.com/corporate/moreinfo/resort_hawaii.html, 9 December 2008.

²⁴ McGraw-Hill Construction Outlook 2009

Large scale government funded projects on O’ahu will be largely composed of military spending, transportation projects and institutional organizations. Department of Defense spending in the near future is anticipated in excess of \$200 million; while UH West O’ahu is estimate to total about \$130 million as the current scaled down version is envisioned.²⁵ Department of Transportation spending is estimated at between \$150 million and \$210 million per year in funded transportation projects from State fiscal year 2009 to 2013.²⁶

Commodity Pricing and Availability

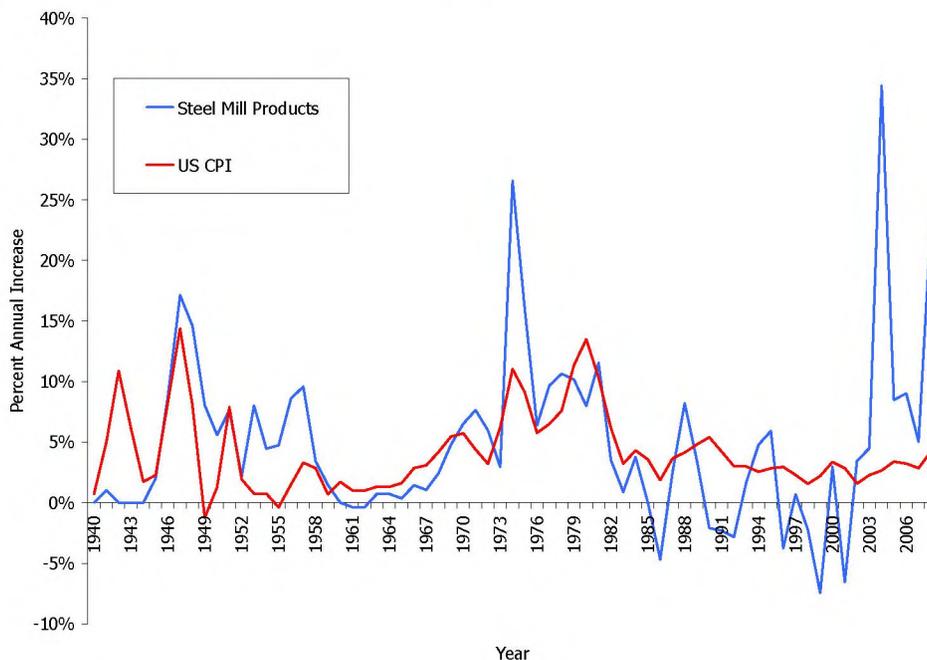
Construction costs over the past eight quarters have been marked by volatility and all-time high commodity prices. Driven by high global demand and price speculation, crude oil and steel prices increased drastically in the second quarter of 2008, reaching some of the highest prices to date.

While commodity and equipment prices may decrease over the next year, PB anticipates slow growth starting in late 2009 as more public works come on-line.

Steel

The graph below shows the US CPI compared to steel mill products PPI over the past 70 years. While the two indices were closely correlated earlier in the century, steel prices have been more volatile in recent years.

Exhibit 8: Growth in US CPI compared to Growth in Commodity Price of Steel Mill Products (1940-2008)²⁷



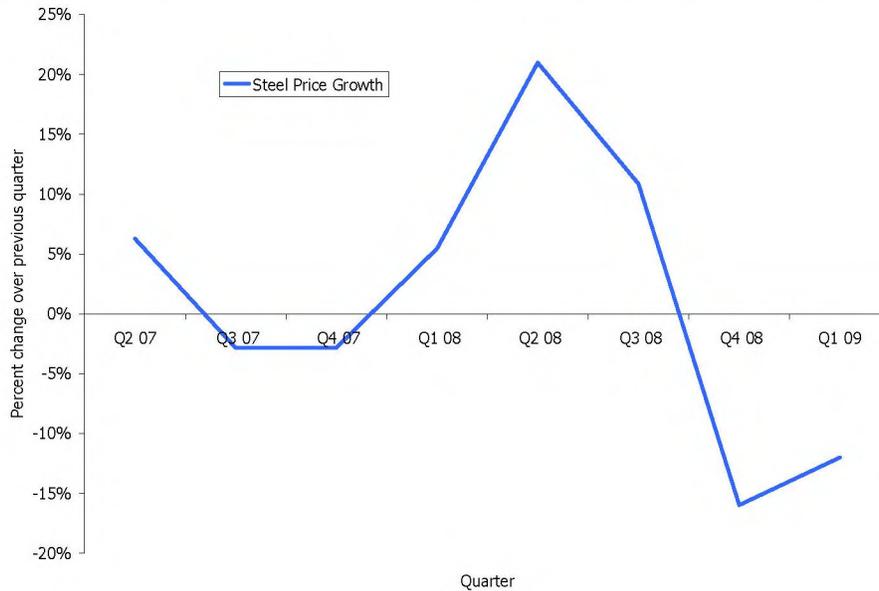
²⁵ Industry interviews 5-6 November 2008

²⁶ Based on the 14 April 2008 revision of the State Transportation Improvement Plan. State fiscal year end 30 September.

²⁷ BLS, Metals and Metal Products, Steel Mill Products, Not Seasonally Adjusted

After a sharp run up in 2006 and market correction thereafter, the cost of steel has again surged, with US Bureau of Labor Statistics (BLS) projecting a year-over-year increase of 14 percent in 2008. Slowed growth and price decreases in the 3rd and 4th quarters of 2008 (calendar year basis), as well as first quarter 2009, leads to erosion of steel price and nearly erase gains made earlier in the year. Exhibit 9 shows the past eight quarterly percent increases in both structural and reinforcing steel:

Exhibit 9: Quarterly change in steel prices Q1 2007-Q4 2008²⁸



Note: Q1 2009 figures extrapolated based on data available through February 2009.

As seen in the figure above, the second quarter of 2008 saw a 20 percent quarterly increase in steel prices, with another 10 percent increase in the third quarter of 2008. This drastic increase in prices was partially a result of high demand and speculation in the commodity markets in early 2008. With the recent credit crunch and a bleak near-term outlook for construction, steel prices are coming down, as evidenced by a drop in prices that in the last quarter of 2008 and first quarter of 2009.

Steel prices on O’ahu are likely to follow global commodity price trends fairly closely, as the four major importers and fabricators on the island should contribute to a reasonably competitive market. In this market, it is unlikely that suppliers will be able to press for escalation, above those on the global market to exact profits. These suppliers include Associated Steel and South Pacific Steel (a subsidiary of Nucor).

Short Term Outlook

Near-term forecasts show a decrease in steel’s price at the commodity level as global demand weakens and the market prices catch up with the recessionary climate. As ENR recently reported, this downturn in demand will lead to a reduction in the amount of steel manufactured, as producers try to prevent a drastic drop in prices and some consolidation of producer’s capacity occurs.²⁹

²⁸ BLS, Metals and Metal Products, Steel Mill Products, Not Seasonally Adjusted

²⁹ Engineering News Record. September 2008. “Prices Slip After Last Spring’s Spike,” 3Q Cost Report.

In reaction, some countries have announced cuts in production to buoy falling steel prices. For example, China’s four largest state owned producers are expected to cut production by up to 20 percent while Russian and Indian firms are following the same route.³⁰

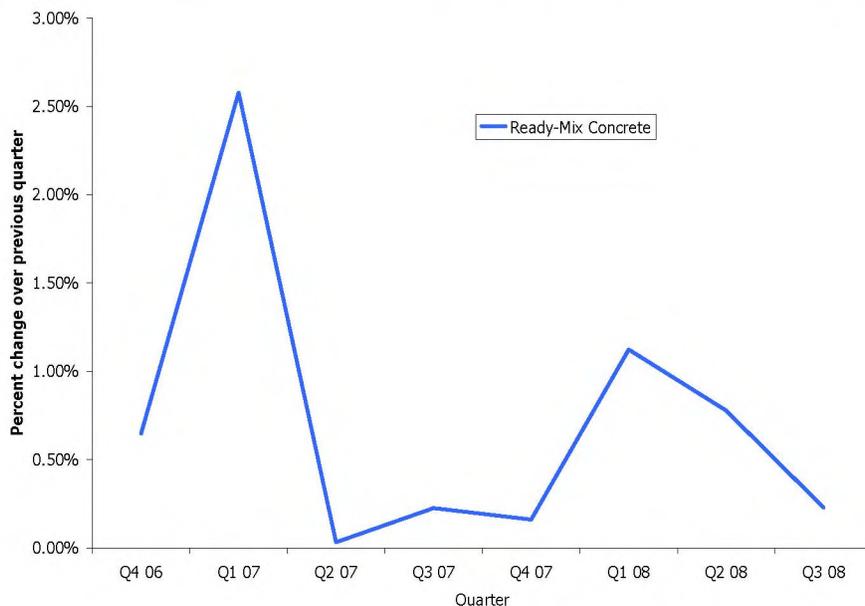
Despite the near term cut in production, countries like China India and Brazil are expected to increase their steel capacity over the next decade to meet increasing demand. The Organization of Economic Development and Cooperation (OECD) anticipates global production capacity worldwide to increase from 1.56 billion metric tons in 2007 to 1.85 billion metric tons in 2010. Vietnam, Iran and Thailand are also expected to contribute to this 18.6 percent increase in production. This may ease global supply constraints, thus easing inflationary pressures.³¹

Based on the economic factors discussed above PB anticipates prices leveling off after Q1 2009. While slow, positive growth is anticipated on a quarter-by-quarter basis starting in the second quarter CY 2009, high steel prices in early FY 2009 (third quarter CY 2008) lead to the decline in average steel prices from FY 2009 to FY 2010. Escalation peaks due to stimulus impacts are anticipated in FY 2012 and FY 2013.

Cement and Concrete

World demand for cement, a key component in concrete, is forecast to grow 5.3 percent per year to 3.6 billion metric tons in 2012, according to a study released by The Freedonia Group. Gains will be driven by strong increases in cement consumption in the developing countries of the world, fueled by rising income levels, and a focus on infrastructure development. Exhibit 10 shows quarterly concrete price increases from the end of 2006 through the third quarter of 2008. Other factors leading to higher costs in the long run are high energy prices and more stringent environmental controls. While there is a downward trend globally and nationally, local prices for concrete are expected to remain high given that the island is limited to one supplier of cement and the scarcity of some other component materials, which is explained further below.

Exhibit 10: Quarterly Percent Increases in Ready-Mix Concrete Prices from Q4 2006- Q3 2008³²



³⁰ *Some Chinese steel firms eye output cuts-Xinhua*, <http://www.reuters.com/article/asiaIpoNews/idUSPEK971020081004>, 17 December 2008

³¹ *OECD Steel Committee says demand, capacity will continue to advance*, <http://www.allbusiness.com/economy-economic-indicators/economic-indicators/11566608-1.html>, 17 December 2008

³² BLS, Ready-Mix Concrete, Not Seasonally Adjusted

In developed nations such as the United States, Japan, and Western Europe, cement sales increases will likely lag behind the global average, although improvement over the 2002-2007 period is expected. In the US, for example, the market could benefit from a potential recovery in residential building activity, as well as government spending on highway and road construction. In Western Europe, a rebound in construction activity may benefit cement markets in countries such as Germany and Portugal. A pickup in construction spending in Japan following an extended period of decline could help bolster overall cement market growth.³³

In 2007 China accounted for nearly half of global cement demand; however, India (currently the second largest market for cement) is forecast to grow at 22 percent in 2009-2010 from 2007-2008. Smaller markets such as Indonesia, Malaysia, Nigeria and Vietnam are also expected to record gains of 7 percent per year or more.³⁴

On O'ahu it is likely that concrete will be somewhat more constrained than other construction components. The component commodities (cement, aggregate, and sand) which make up concrete have experienced varying degrees of scarcity in Hawaii. Cement has not been particularly scarce in the recent past, but is imported to the island by a sole importer (Hawaiian Cement). Given the efficiencies achieved by a sole supplier, barriers of entry for a competing supplier would likely be high. Additionally, these efficiencies would make it difficult for a contractor or concrete plant to vertically integrate to import their own cement. The absence of any real competition for cement importation would increase the ability of Hawaiian Cement to pass cost increases (including shipping costs) on to customers or exact higher profit on materials.

Aggregate supplies on the island have proven sufficient in the past, but some concerns were raised by members of the construction industry that supplies may be limited in the future. Looking forward some quarries may be limited by permitting issues, but most industry members interviewed agreed that aggregate will remain sufficient to meet the demands of the proposed transit project and other construction activities on the island.

Industry members cited the supply of sand as an issue in recent years. Much of the sand used in concrete production on O'ahu has been recently imported from Maui and British Columbia. Continued requirements for importation and rising demand will likely lead to higher growth rates for the cost of finished concrete.

It is not anticipated that concrete production will be an issue going forward as sufficient production capacities are available from various batching plants on O'ahu. Ameron, a major concrete supplier, alone has the capacity to produce approximately 400 cubic yards of concrete per hour at its on-island plants. Similar capacity is available from Hawaiian Cement.³⁵ Short-term concrete forecasts are based on short-term outlook information provided by a key local materials supplier. Supplier estimates approximate concrete price escalation of 7 percent in 2008 and 3 percent in 2009.

Labor

The retirement of the baby boomer (born 1946–1961) generation from the workforce, and a lack of Generation Ys (born 1976–1991) to replace them, has already resulted in the contraction of the labor pool in the US.³⁶ However, recent data showed that unemployment continues to fall, driven by continued decreases in employment in the construction, manufacturing, and retail trade industries. A high unemployment rate combined with the downward trend in the number of new jobs added could result in an increase in labor supply in the near term, particularly in the construction industry.

³³ http://cementamericas.com/mag/global_cement_demand_0708/

³⁴ <http://www.researchandmarkets.com/research/d76f02/indian%5fcement%5findu>

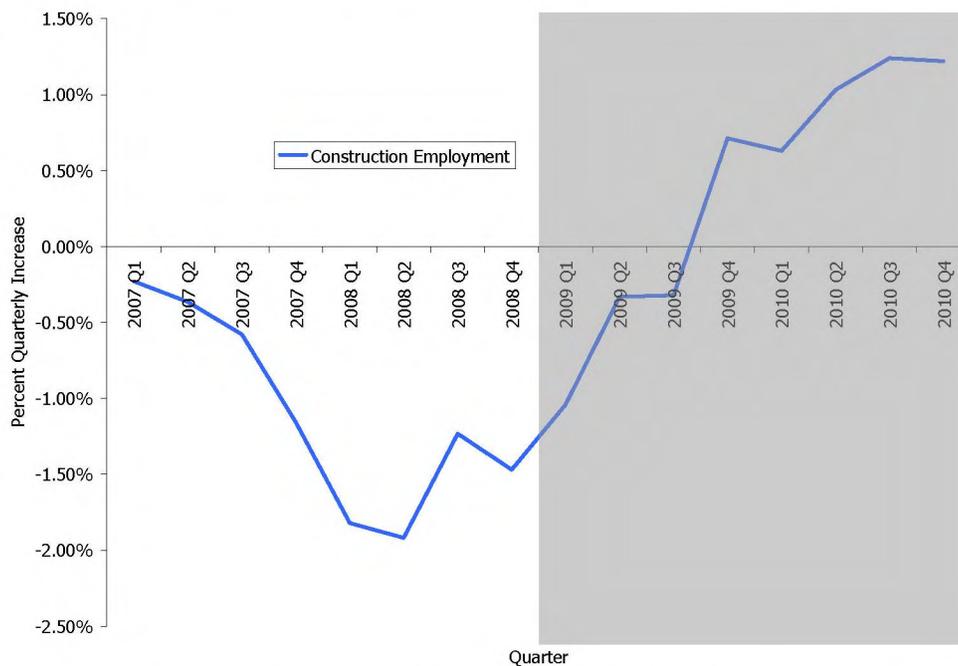
³⁵ Industry interviews, 5-6 November 2008.

³⁶ <http://www.kpmg.com/global/pressroom/pressreleases/pages/Labor-crunch-in-developed-world.aspx>

In October 2008, the overall unemployment rate rose from 6.1 percent to 6.5 percent as reported by BLS.³⁷ In the same month, the construction sector had the highest unemployment rate with 10.8 percent unemployment. While unemployment rose, wages in October 2008 increased 5.1 percent over October 2007. Within the construction industry, highway, street, and bridge construction has been particularly hard hit in regards to unemployment.³⁸

Though labor cost is highly localized, Global Insight forecasts that overall employment in the US construction industry is expected to decrease through the end of 2009 before slowly beginning to increase in 2010 (Exhibit 11).

Exhibit 11: Quarterly Increases Construction Employment (forecast shaded)³⁹



With unemployment numbers on the rise and construction jobs decreasing at the same time, wages will likely fall as well, given increased competition for projects and work.

While local labor costs will certainly be somewhat sensitive to national trends, they will be largely stabilized by local union contracts. Labor relations have stabilized in recent years after contentious negotiations and work stoppages during the 1980s. The last construction labor strike in Hawaii took place in 1985.⁴⁰ These work stoppages proved costly to both labor and employers, and both sides have agreed to stabilizing 5-year agreements in recent years.

The majority of labor unions renegotiated their labor contracts in September of 2007 meaning that a new contract will be started in September of 2012. Based on the wages of general laborers, who are expected to make up most of the labor on the project, union wage rates are anticipated to grow 3.5-4 percent per year until the renegotiation point. When contracts are negotiated in September 2012, it is anticipated that

³⁷ Simonson, Ken. November 2008. *The Data DIGest*.

³⁸ IBID

³⁹ Global Insight. Accessed August 2008. "Employment- Construction." US Bureau of Labor Statistics: CES, QCEW; Moody's Economy.com Estimates

⁴⁰ Industry interviews, 5-6 November 2008

pay increases will be front loaded to as high as 6 percent in the first year of the contract, but increases in the final years of the contract will likely tail off resulting in an average growth rate of 3.5-4 percent per year over the life of the contract. While 6 percent first-year increases were predicted by some industry members, PB anticipates that negotiations will likely result in a more moderate front loading. Labor unions will likely push for these early increases in order to meet increasing pension liabilities created by increased retirement pools and falling pension assets due to market downturns.

In discussions with industry members, the consensus from labor unions and contractors was that there is currently ample labor supply due to recent construction slowdowns in the commercial, hotel, and housing sectors which will persist for at least the next few years. For example, the carpenters union currently has approximately 15 percent of their members waiting for work.⁴¹ Should labor supply become short, laborers would likely be imported from California, Nevada, and Utah where there are shared union agreements. While labor agreements would not be an issue, the contractor would be responsible for bearing the cost of relocating workers. This in turn would raise costs at higher than expected rates.

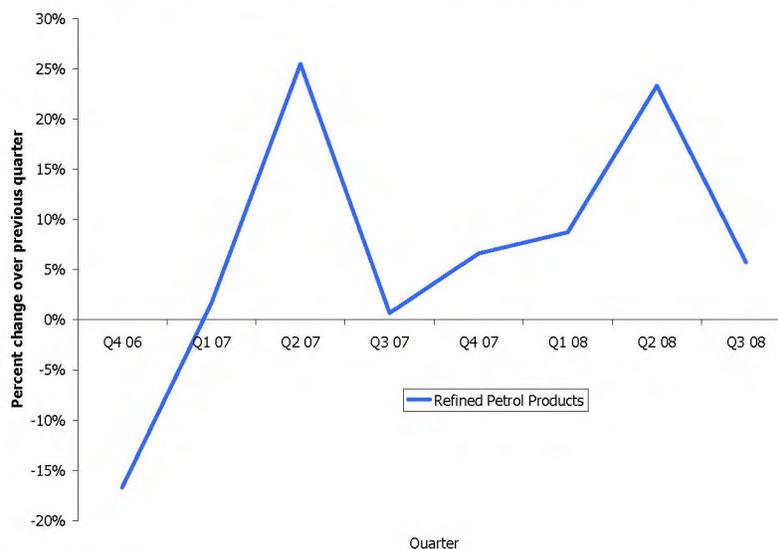
Given the abundance and apparent quality of construction workers in Hawaii, it is anticipated that only a select few specialized workers will be imported from off of O’ahu. Contractors will likely bring experienced operators for specialized equipment and supervisors for key activities from similar past projects to train and supervisor local labor. This is not expected to make up a substantial portion of labor used on the project and therefore not a significant factor in cost escalation.

Energy & Fuel

Energy costs affect construction escalation in a number of ways. On top of the industry’s direct consumption, higher energy prices cascade throughout the economy as a whole, exerting an upward price pressure on everything from labor to transportation. The construction industry is particularly elastic to energy prices as there is a high demand for goods movement and fuel for heavy equipment. In addition, the production of many critical materials, such as cement, is very energy-intensive.

As shown in Exhibit 12, the eight quarters from fourth quarter 2007 to the third quarter 2008 have seen a high volatility in fuel prices, especially refined petroleum, ranging from minus 15 percent in the fourth quarter of 2006 to 25 percent in the second quarter of 2007.

Exhibit 12: Quarterly Change in Refined Petroleum Prices, Past Eight Quarters⁴²



⁴¹ Industry interviews, 5-6 November 2008

⁴² BLS, Refined Petroleum Products, Not Seasonally Adjusted

The drivers behind the overall price increases have been primarily supply, demand, and market speculation. On the supply side, declining production from aging fields and limited refining capacity have affected the market's ability to keep up with growing demand.⁴³ At the same time, continued growth in Asian economies, such as India and China, have kept demand on the rise. Looking forward, as the construction industry begins to feel the global recession, demand should slacken, stabilizing the price of petroleum in the near-term. This behavior is reflected in the Energy Information Administration's (EIA) forecast in the average price of *Refined Petroleum Products*, which the agency predicts will decrease from 2009 through 2016. This decrease in prices comes after a massive spike in 2008 and will bring petroleum prices back down to 2005 levels by 2013.⁴⁴

While energy costs are not explicitly forecasts as a part of construction escalation, they are implicit in each component forecast. As Hawaii is an island and requires nearly all materials to be transported from the mainland US, Asia, or elsewhere, fuel costs for shipping may play a significant part in cost escalation for construction components in Hawaii.

Project Specific Issues

Vehicles (Rolling Stock)

It is anticipated that vehicle cost will depend on a number of factors which will be largely influenced by the place of origin. These factors include exchange rates, local labor prices, and other country or region specific factors. At the time of writing, the particular procurement strategy was not known. Therefore it was impossible to provide reasonable estimates of the various factors contributing to cost escalation. As a proxy, the escalation rate for the cost of vehicles is based on the forecast PPI for construction equipment obtained from Moody's Economy.com.

Right of Way

Right of way (or land acquisition) costs will largely be dependent on property values in the construction area. Property values in Hawaii have been highly volatile over the last five years. Median home prices on O'ahu are high, on average exceeding those of all but a few mainland US metropolitan areas.⁴⁵ Condos on O'ahu are similarly priced. Real estate prices within the project corridor vary, with the lowest property values in 'Ewa. The highest property value areas on O'ahu are outside the corridor in Diamond Head and Hawai'i Kai (median selling prices equaling \$1.1 million and \$860,000 in 2007, respectively).⁴⁶

In general, property values on O'ahu have grown strongly over the past 20 years. From 2000 to 2007, the prices of single-family homes and condos grew at a CAGR of 12 percent and 15 percent, respectively,⁴⁷ well outpacing general inflation, which was 3.1 percent during the same period.⁴⁸ A comparison of median single-family home and condo prices statewide and nationally, over the same period, is shown in Exhibit 13 and Exhibit 14.⁴⁹

⁴³ Engineering News Record. June 2008. "Inflation Making Big Push in 2008." *Cost Report 2Q*.

⁴⁴ Engineering News Record. June 2008. "Inflation Making Big Push in 2008." *Cost Report 2Q*.

⁴⁵ National Association of Realtors.

⁴⁶ 2007 median home prices estimated based on first three quarters of figures from the Honolulu Board of Realtors.

⁴⁷ Honolulu Board of Realtors.

⁴⁸ Inflation is estimated using the Consumer Price Index for the State of Hawai'i, as reported by Global Insight, Inc.

⁴⁹ Global Insight, Inc. Data not available for statewide condo price growth.

Exhibit 13: Single Family Home Price Growth Rates

Region	CAGR (2000-2007)
PUC	12.7%
Central O'ahu	15.7%
'Ewa	14.8%
Entire Island	12.3%
State of Hawai'i (Existing)	13.6%
National (Existing)	7.5%

Exhibit 14: Condominium Price Growth Rates

Region	CAGR (2000-2007)
PUC	15.7%
Central O'ahu	19.3%
'Ewa	20.4%
Entire Island	15.1%
National (Existing) ⁵⁰	4.5%

In the past several years, Hawaii has experienced high price growth in comparison to the US national average; however, as a result of the burst of the housing bubble and general economic downturn, median home prices have fallen in Honolulu since 2007 for new homes and 2008 for existing homes. Based on forecasts which are publically-available from UHERO, median home and condominium prices are expected to in CY 2009 through CY 2011.

Right of way prices and price escalation will be highly dependent on the area of construction and will vary along the project alignment. This variability has not been factored into the escalation forecasts presented here. These are based on overall property values on O'ahu using median home prices and median condominium prices for Honolulu as the primary proxy for property values.

Contractor Availability

It is anticipated that contractor availability will increase in-line with economic downturns and slowed construction activity. This trend will, however, be much more pronounced with local contractors than large national or international firms who would most likely be a prime contractor on a project of this size. Large construction firms will likely view a transit project in Honolulu as only one part of an international strategy including the West Coast US, Guam, and possibly Asia. This reduces the chance that a contractor would "buy" a bid with an inexpensive, but risky bid and therefore reduce the opportunities for the project to receive the benefits from downturns in the local market. Conversely, smaller contractors and suppliers may reduce the costs of downstream products or give prime contractors more favorable pricing which could benefit the project as a whole.

Precast Concrete

Based on interviews with contractors, it appears likely that contractors will establish their own precasting plant and bypass existing precast suppliers in order to control both quality and schedule of the product.

⁵⁰ Median national condo price CAGR based on best available data (2004-2007).

For these reasons, it is not anticipated that precast concrete sections will lend any substantial inflationary pressures beyond that of its component parts (concrete and reinforcing steel).⁵¹

Competing Projects

Local

General economic downturns have, in many ways, stalled construction in Hawaii. Heavy construction activity in Hawaii will largely be driven by government and institutional spending.

A number of military projects are expected over the next few years on the island, primarily at the Pearl Harbor naval base. Contracts include new building construction, military housing construction and renovation, dry dock repairs and upgrades, and the upgrade of Ford Island to include many of the base functions. These projects will likely total in excess of \$200 million over approximately the next five years. With a heavy weighting towards housing construction, it is unlikely that these projects will grossly impact the competitive environment for the transit project, especially considering the disproportionate scales.⁵²

There are between \$150 million and \$210 million per year in funded transportation projects from State fiscal year 2009 to 2013.⁵³ In addition, there is a \$130 million planned development of the West O'ahu campus of University of Hawaii. It is anticipated that these government funded and institutional projects (including the estimated \$165 million in transportation stimulus spending for the state) will largely dominate heavy construction in the near future as private development continues to fall off in the economic downturn. The only known major private development is the development of the Disney resort in the Ko Olina area. This project is scheduled to open in 2011.

Guam

Military build-up on the island of Guam is ongoing and major transfers of US forces from Japan (including forces stationed in Okinawa) and South Korea will be completed by 2014. Costs to construct new military installations on Guam are estimated in excess of \$10 billion.⁵⁴ In addition to spending to construct military installations, a great deal of civil infrastructure will be required to support military personnel and activities. In response to this, the local government in Guam has announced approximately \$1.5 billion in transportation projects over the next five years.⁵⁵

While construction in Guam may place some pressures on costs in Hawaii, it is not anticipated to be particularly significant given the distance between the two. It will, however, likely be a consideration of large contractors who will consider heavy construction projects in Guam and Hawaii as part of the same portfolio of work. This will further decrease the likelihood that a contractor will give unusually low bids in order to win work.

Methodology and Results

As discussed in the previous sections, construction activity in Hawaii, particularly as it pertains to the proposed transit project, will vary somewhat from that of the mainland US.

- The local economy, and thus construction activity, is highly dependent on tourist activity from both the US and Asia.
- There is a heavy military presence on the island which will drive much of the heavy construction in the near future.

⁵¹ Industry interviews, 5-6 November 2008

⁵² Department of Defense, Bizjournals.com, and www.savekauai.org/military

⁵³ Based on the 14 April 2008 revision of the State Transportation Improvement Plan. State fiscal year end 30 September.

⁵⁴ Congressional Research Service, *Guam: US Defense Deployments*, 26 February 2008.

⁵⁵ Marinas Variety, *Guam Launches Largest Public Works Project in its History*, 6 December 2007, obtained from: <http://jgpo-guam-cmtf.blogspot.com/2007/12/guam-launches-largest-public-works.html>.

Additionally, the current global economy is experiencing unprecedented shifts due to global economic downturns and credit tightness. As a result of the points stated above, historical cost trends cannot be assumed to provide a sound basis for forecasting future cost movements and relevant trends on the mainland US may not be applicable to Hawaii. In essence, standard forecasting methodologies, which rely largely on a statistical extrapolation of trends and causal relationships, cannot be uncritically employed for today's Hawaii construction market.

As such, this report employs a forecasting methodology, which relies on its analysis of a number of third party resources (both publically available and subscription services) to derive an overall view of the construction economy. These sources contain both quantitative and qualitative analyses of the construction and general economy. These sources include, but are not limited to:

- ENR's 2009 Construction Outlook
- Moody's Economy.com
- PB's Economic Forecasting Review (EFR), Volume 2, Issue 2
- Commodity forecast data from Global Insight and Moody's Economy.com
- Historical commodity and labor data From the Bureau of Labor Statistics
- Labor rates available from the State of Hawaii Department of Labor
- Energy forecast information from the Energy Information Administration
- Published construction economy analysis and information from the Associated General Contractors

In addition, PB conducted a number of interviews with local industry members including labor union representatives, materials suppliers, and contractors. A list of interviews and interview notes can be seen in Appendix A. These interviews helped PB to understand the local construction market and to expand the forecast beyond simply analyzing commodity pricing.

As forecast numbers are shown in fiscal years, there is some apparent distortion of the FY 2009 values, particularly in the cost of steel. Values are based on year-over-year growth of annually averaged quarterly indices. Thus FY 2009 forecasts combine already experienced changes from the third quarter of CY 2008, as well as anticipated growth or declines in the fourth quarter CY 2008 and the first and second quarters of CY 2009. In some cases this phenomenon masks falling prices in late CY 2008 and early CY 2009.

For steel in particular the high FY 2009 growth rate is driven by strong growth in the third quarter of CY 2008, as compared to price declines in the third and fourth quarter of CY 2007. This results in a large year-over-year change (approximately 8%) when average index values for FY 2009 are compared to FY 2008.

Based on all the information gathered, PB created a set of individual component forecasts. PB worked with the local project team to come up with a set of components which made up the preliminary construction cost estimate.

- **Labor** – Labor rates will follow prevailing wage rates published by the State of Hawaii Department of Labor in the early years, and then forecast based on information gathered in industry interviews, contracts are anticipated to be somewhat front loaded when they are renegotiated in FY 2013 and FY 2018. These escalation rates may be somewhat different if a project labor agreement (PLA) is signed for the project.
- **Steel** – Steel prices are anticipated to continue to fall through the end of Q1 2009, and begin to recover in the second quarter of CY 2009. This will result in negative growth from FY 2009 to FY 2010. Somewhat higher rates are anticipated in FY 2011 in response to some increased demand from stimulus packages in the US and China. Major increases as a result of stimulus, however, are not anticipated until FY 2012 and FY 2013.

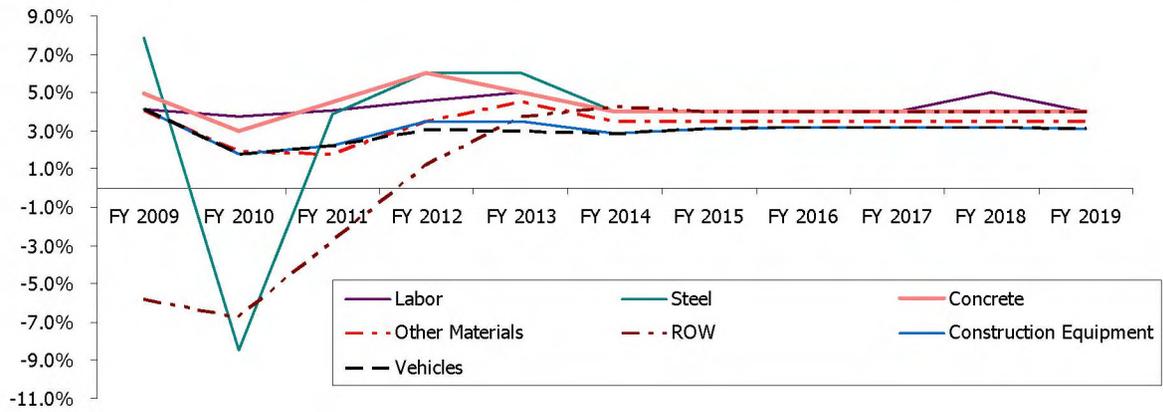
- **Concrete** – Concrete escalation is anticipated to stay relatively high given the local conditions for this market including a singular importer of cement and scarcity of sand. Prices through FY 2009 and FY 2010 are based on outlooks provided by materials suppliers. Rates thereafter reflect anticipated economic factors for the local and global construction markets.
- **Other Materials** – The Other Materials escalation is based on a general outlook for construction in Hawaii, O’ahu, and Honolulu. This outlook suggests a deeper and longer downturn for construction in Hawaii as tourism and construction financing are hurt by the current economic and financial downturns. FY 2009 continues to be influenced by higher escalation in CY 2008 and therefore remains at approximately 4 percent. Cost escalation in FY 2010 and FY 2011, however, is anticipated to fall to 1.9 percent and 1.8 percent, respectively. Impacts from stimulus spending are not expected for at least two years resulting in escalation peaking at 4.5 percent in FY 2013.
- **Right of Way** – Right of way cost escalation is based on forecasts of real estate prices in Hawaii which were obtained through a number of third party sources. These prices and price escalation will largely vary based on the location of the land taken. This detail is not included in this forecast, but rather a general view of real estate value growth is provided. After FY 2014 a consistent rate of 4 percent per year is forecast.
- **Construction Equipment** – Construction equipment growth is based on forecasts of construction equipment PPI obtained through subscription service with Moody’s Economy.com. This forecast was modified to reflect both a slightly increased demand in FY 2012 and CY 2013 as well as the higher escalation rates anticipated because of the requirement for specialized equipment to install precast elevated sections. Escalation is forecast to peak at 3.5 percent in FY 2012 and FY 2013. From FY 2014 on PB expects construction equipment cost escalation to be approximately 1 percent higher than that forecast by Moody’s. Thus, PB expects construction equipment escalation to remain at or around 3 percent.
- **Vehicles** – It is anticipated that vehicle cost will depend on a number of factors which will be largely influenced by the place of origin. These factors include exchange rates, local labor prices, and other country or region specific factors. At the time of writing, the particular procurement strategy was not known. As a proxy, the forecast PPI for construction equipment obtained through subscription services from Moody’s Economy.com is used as the escalation rate for the cost of vehicles. As stated above, PB feels Moody’s forecast is too low from FY 2012 on and has added 1 percent to Moody’s forecast resulting in an escalation rate at or around 3 percent from FY 2012 on.
- **Professional Services** – Professional services are anticipated to follow CPI and are estimated here using the CPI assumptions provided from the financial feasibility model.

The exhibits below shows PB’s revised HHCTCP-specific construction cost escalation forecast.

Exhibit 15: HHCTCP-Specific Cost Escalation Forecast (Table)

Fiscal Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Labor	4.2%	3.7%	4.1%	4.6%	5.0%	4.0%	4.0%	4.0%	4.0%	5.0%	4.0%
Steel	7.9%	-8.5%	3.9%	6.0%	6.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Concrete	5.0%	3.0%	4.5%	6.0%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Other Materials	4.1%	1.9%	1.8%	3.5%	4.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
ROW	-5.8%	-6.8%	-2.8%	1.2%	3.7%	4.2%	4.0%	4.0%	4.0%	4.0%	4.0%
Construction Equipment	4.2%	1.8%	2.2%	3.5%	3.5%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
Vehicles	4.2%	1.8%	2.2%	3.0%	3.0%	2.9%	3.1%	3.2%	3.2%	3.1%	3.1%
Professional Services	1.2%	1.5%	2.0%	2.3%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

Exhibit 16: HHCTCP-Specific Cost Escalation Forecast (Chart)



Appendix A: Industry Interview Notes

Note that all notes are aggregated as interviewees were told that no statement would be specifically attributed to them.

To: Honolulu Transit, PB Project Team
J Van Epps, M Scheibe, S Hogan
From: M Bieschke, B Ship, (PB Consult)
Re: Cost Escalation Industry Interviews, Combined Notes
Date: 08 December 2008

Meeting Attendees

Laborer's International Union of North America Local 386

A Oliver
M Matsumoto
A Lardizabal
C Hayashi
Attending for PB: M Bieschke, B Ship

International Union of Operating Engineers

P Artates
K Yamamoto
Attending for PB: M Bieschke, B Ship, S Hogan

GPRM Prestress

J Albertson
A Boyd
Attending for PB: M Bieschke, B Ship

Ameron International

E Shimabukuro
Attending for PB: M Bieschke, B Ship, J Van Epps

Hawaiian Dredging

R Morishita
C Ota
M Nakashima
A Lock
W Wilson
Attending for PB: M Bieschke, B Ship, J Van Epps

South Pacific Steel

L Scherill
Attending for PB: M Bieschke, B Ship

Kiewit Building Group Inc.

T Broderick
L Wilhelm
Attending for PB: M Bieschke, B Ship, J Van Epps

Nordic PCL Construction, Inc.

W Melnyk
R Crago
G Kaneshige
Attending for PB: M Bieschke, B Ship, J Van Epps

Labor

- All labor contracts have been renegotiated in the last 18 months. The majority of these were renegotiated in September 2008.
- The labor unions have been historically signing 5-year contracts.
- There were some labor problems in the 1980's which cost both the labor unions and contractors. The last labor strike occurred in 1985. After this, both sides have increasingly been interested in maintaining positive labor relations.
- Recent labor contracts have averaged 3.5%-4% per year over the 5-year contract, but are often front loaded with 6%-7% labor rate increases in the first year of the contract.
- A similar front-loading is likely in the next union contract as many unions have shortfalls in their pension funds and will need cash injections.
- Currently, there is an abundance of laborers and skilled craftsman due to work slow-downs in Hawaii. General consensus is that the abundance of labor will persist for at least the next few years. Unfortunately, unionized labor agreements will likely prevent the project from realizing any upside due to an over supply of labor.
- Most labor is sourced from on O'ahu or imported from other Hawaiian islands. Labor unions in Hawaii also share labor from some western states (CA, NV, UT) where construction demands have fallen substantially, although it is likely that a contractor sourcing labor from the west coast US would need to pay relocations costs.
- Contractors express a desire to use as much local labor as possible, but they acknowledge that they will likely import a few experienced workers to do critical tasks such as train laborers in pre-casting shops or operate segmental construction equipment.
- Contractors are likely to bring any management functions from their corporate structures located on the mainland US.
- Union membership reached its highest historical point sometime in 2007 and many of those workers are now "on the bench."

Materials

Precast

- There is currently only one pre-cast plant on O'ahu (Grace Pacific).
- This is an activity which really cannot be conducted elsewhere due to very high transportations costs for large sections.
- The current GP plant would need to expand in order to meet demand for the transit project.
- Additional cost would likely be added if precast section design differs from contract to contract as the fixed cost of design and mobilization would be required for each new design.
- Conversely, it is likely that any sizeable contractor would open their own precast plant on the project site in order to control this critical activity. This would alleviate any inflationary pressures due to a fixed supply from one plant

- The primary barrier to entry for competing precast operations will likely be land acquisitions.
- Inputs for precast are labor, cement, aggregate, and rebar steel.

Cement & Concrete

- There is only one importer of cement on the island (Hawaiian Cement) and it would not be practical to bypass this supplier because one could not achieve the same scale efficiencies.
- Hawaiian Cement imports cement almost exclusively from Asia.
- Aggregate is sourced from quarries on O'ahu and it would be very expensive to import this from off island. There are some permitting concerns on some of the existing quarries.
- Sand has grown increasingly scarce recently, with much of the sand being imported from Maui and more recently from British Columbia at a very high cost.
- Cement prices increased by about 10% in 2008, but are expected to come down to about 7% in 2009. Aggregate prices are expected to grow at about 6% in 2009.
- There is some danger that labor negotiations for the plant workers and truck drivers (both teamsters) will not go well when they occur in 2008, but these are no anticipated stumbling blocks.
- There are no concerns for the capacity of on-island concrete plants.
- Sand and aggregate scarcity was the primary material concern of contractors.

Steel

- There are a number of steel fabricators and importers on the island, including a subsidiary of Nucor and Associated Steel.
- Steel suppliers have seen a drastic drop off in steel prices late in 2008. They expect that prices will continue to fall and may approach 2007 year end values by the end of 2008. Price softening is expected through 2010.
- Steel fabricator costs (i.e. costs to contractors for finished materials) are composed of approximately 60% materials and the remaining cost to detailing, engineering, and fabrication.
- Prices are currently being issued on a monthly basis, which is an improvement over daily or weekly price quotes earlier in the year.
- It is unlikely that anyone could ship in fabricated steel from off island as the unusual shapes and small volumes would cause high inefficiencies.
- Prices escalation for steel in Hawaii are unlikely to vary greatly from global trends.

Equipment

- While there is an abundance of general construction equipment and demand is likely to be depressed in the near term, specialized equipment including gantries used for segmental construction will be imported from the mainland US.

Competing Projects

- A scaled down version of the West O'ahu campus of UH will likely break ground in 2009. Project is valued at approximately \$130 M.
- Plans for resort expansions and new resorts have stalled or are being placed on hold due to both tightening of credit availability and slowing of both the US and Asian economies and thus tourist demand.
- The Disney resort is the only major private development which is ongoing despite the current economy.
- Military spending in Hawaii is expected to continue and not be impacted by economic downturns. There is likely close to \$1 B worth of military construction planned on O'ahu.
- Some competition for resources may come from military development, and corresponding infrastructure projects in Guam. It is estimated that these projects will consume approximately \$10 B in the next 10 years.
- It is anticipated that by the end of 2009 contractors in Hawaii will no longer have a backlog of projects to fall on.
- There is some belief that there will be increased demand from TOD projects, which are induced as construction for the transit project progresses.

Local Market & Contractor Trends

- Contractors identify property acquisitions may be an expensive part of the project.
- Contractors see some constraints on the local supply of engineering expertise; however, larger contractors will likely be able to source technical expertise from the mainland US at little additional cost.
- The recovery in spending for tourism related construction will likely be linked to a recovering of credit availability and both the US and Asian economies.
- The prime contractors for many parts of the transit project are likely to self perform about 70% of these activities, which would bypass some constraints