



Exhibit E

**PREDICTED IMPACTS
OF THE TESORO SAVAGE FACILITY ON
DEVELOPMENT AND REDEVELOPMENT
IN DOWNTOWN VANCOUVER, WASHINGTON**

DECEMBER 18, 2013

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I. EXECUTIVE SUMMARY

- The proposed Tesoro Savage Vancouver Energy Distribution Terminal is predicted to have a substantive impact on development pattern in downtown Vancouver. This is attributable to an expected negative impact on development patterns in the Waterfront Vancouver project, which would be expected to impact achievable pricing and capitalization rates in the broader downtown market.
- In order to estimate the predicted impact of the new facility on the broader area, Johnson Economics utilized a predictive development/redevelopment model. This model translates assumption with respect to current and anticipated market conditions into predicted development outcomes. The impact of the Tesoro facility was calculated based on a reconciliation of predicted outcomes with and without the facility.
- The predicted impact of the facility on the downtown Vancouver study area would be as follows:
 - \$98.3 million reduction in new construction investment
 - 341,000 square feet reduction in commercial space
 - A net change of \$138.1 million reduction in Real Market Value
- The implications of this loss would include significant losses in employment, tax revenues and less efficient utilization of infrastructure investments

The Model provides a “baseline” projection of development assuming current conditions and trends, and a projection assuming the Tesoro facility is built and operated as described in their submittal materials. The results of the two scenarios are then compared to get an estimate of how much the facility may impact economic development activity over normal baseline predictions.

Precisely quantifying future activity in a broad real estate marketplace with thousands of different property owners, businesses, and other interests, and differing levels of public involvement, is of course impossible. Therefore, while this Model does provide specific quantified estimates, *it is best to think of the results as a broader estimate of the relative magnitude of economic development* under the two scenarios.

More detail on the methodology used in the Model is included in Section VI of this report.

B. GENERAL IMPLICATIONS AND ASSUMPTIONS

- The Model reflects our expert opinion that the proposed facility will substantively impact development activity in downtown Vancouver, reducing achievable pricing as well as increasing perceived development risk.
- The Model produces quantified outputs of multiple measures of development activity: construction investment, new housing units, new commercial space, and new real market value. It is inherent to the design of the Model to produce precise numerical results of these measure. However, it is impossible to accurately predict development activity with such precision over any period of time.
- **Therefore, it is important to remember that the results of this Model are best considered as an indicator of the estimated magnitude of impact from proposed facility.** In other words, the more useful conclusion would be “the new facility may reduce housing production by around 15%”, rather than “the facility will lead to an additional 437 units.” The first provides useful reference for discussion, while the second is almost certain to prove untrue because it is overly precise.
- In a related point, the results from this Model can be presented in the form of a range. Because the Model allows calibration, it can be used to adjust assumptions and test results under different scenarios.
- The Model uses specific parcel-level data to generate quantified measures of predicted development activity, but it is important to remember that this Model is actually generating a broad study-area-wide estimate of development activity. In no cases should this Model be used to reach definitive conclusions about what will happen on any given parcel. Any data provided that identifies parcels, be it in map or data base form, must specify that *it is making no firm predictions or guarantees on the eventual development or lack of development on specific properties.*
- Because the Model is an indicator of broader “bulk” trends in the study area, it may actually provide a better approximation over a longer period of time. While a five or even ten year period will be highly dependent on the current and near-term trends in the real estate development environment, a longer period of fifteen to twenty years will include more swings in the market cycle, and thus average out these ups and downs.

C. GENERAL APPROACH

The Model is structured to measure predicted changes in investment pattern associated with impacts to key variables in the development equation. Key inputs in the “production” model are those that impact revenues, costs, return parameters and site entitlements.

The Model is predicated on an assumption that the operation of the proposed Tesoro facility will substantively impact a number of variables that influence the perceived development environment, triggering a predictable response in the market. The production model will convert marginal shifts in assumptions with respect to these variables into changes in supportable residual land values and in some instances development forms.

The production component of the model can be broken up into three primary categories that help determine final development form: achievable pricing, cost to develop, and threshold returns. Shifts in these inputs can alter associated patterns of investment. In this model, the proposed facility is assumed to impact some of these inputs, and therefore alter investment and development patterns.

A key objective of the Model is to develop a theoretical construct within which to evaluate the impact of the shift in assumptions on the anticipated development and investment patterns within impacted areas. The Model generates a profile of predicted development activity representing a “baseline” scenario, and a scenario assuming the proposed new facility, in order to measure the net impact.

D. LOCAL VARIABLES

This component of the model incorporates the characteristics of specific study areas. The variables include information on pricing, amenities and physical property characteristics at the parcel level.



Pricing

Assumptions with respect to current pricing in the area, reflecting the estimated anticipated pricing for new product by category, would need to be generated as an input. This would include per square foot rental rates for rental apartments, sales prices per square foot for ownership residential units, and net lease rates per square foot for office and retail space. In addition, assumptions with respect to achievable pricing for parking spaces would be developed. These variables should be set to reflect the achievable pricing that a developer would assume for a new construction project in the area being studied.

The current achievable pricing structure is an important variable to consider in predicting the marginal impact of any changes in the development environment, as it is a significant factor in determining the form of development as well as developing supportable residual property values in the district. While the pricing experience of new comparable projects can be a strong predictor of achievable pricing, in many markets there may be limited or no new product to establish a reliable price. Nonetheless, an assumption of current achievable pricing in a study area will be necessary to run the model.

Physical Characteristics

As with pricing, the physical characteristics of prospective corridors will be a major factor in the predicted magnitude and character of redevelopment. The model incorporates an assessment of existing properties at the parcel level, for both improved as well as vacant sites. Inputs to the model include the following:

- The estimated Real Market Value (RMV) of Improved sites at the parcel level (This variable is used as a proxy for the market value of the site in and found in assessor records);
- Parcel size/square feet; and
- Current entitlements (zoning) by parcel.

Within the model, the attributes of individual parcels are used to predict the likelihood of redevelopment, with properties that have a high current value of improvements being more challenging to redevelop. The zoning entitlements by parcel is used as a screen, which limits potential redevelopment scenarios to those allowed under the zoning.

Amenity Mix

The existing amenity mix reflects the current and anticipated level of amenity in the district, and should help to define the marginal impact of the proposed facility on the local amenity base. It is assumed by the Model that the new facility would decrease the local amenity base and reduce marketability, primarily through a more direct negative impact on the development patterns in Waterfront Vancouver.

E. DEVELOPMENT/REDEVELOPMENT MODULE

The development/redevelopment module is intended to simulate the development decision tree, factoring in the impact of the key inputs on decisions to undertake development activity. The model is based on a series of simplified pro formas for 27 theoretical development programs that characterize the relationship between key variables, predicted development form and associated residual property values. The module generates a generalized determination of the highest and best economic use based on the theoretical development programs, as well as an associated residual property value associated with each program. This information is reconciled with information on the existing inventory information and zoning, resulting in a predicted pattern of investment.

Highest and Best Use

The module initially solves for a development solution that represents the highest and best use of the property under the assumptions used, as well as outputting an associated residual property value. The highest and best *economic* use of the site is defined as the *allowable* land use program that yields the greatest return to the existing property, and the residual property value reflects the maximum acquisition value supported by that program under the assumptions used. (There may be additional considerations in determining the *overall* highest and best use of land from a community and planning perspective, but this Model focuses on the economic component which is most relevant to private developers.)

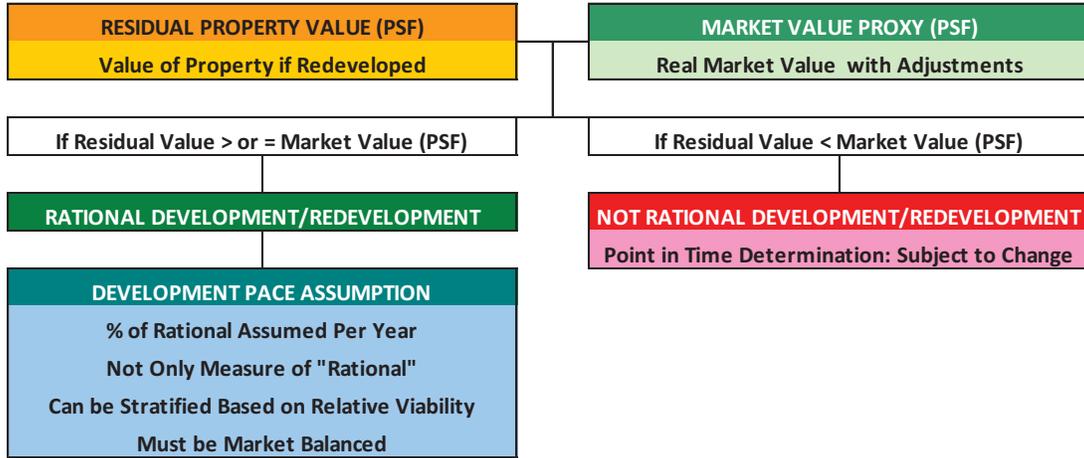
The highest and best use determination is based on the allowable use that has the highest indicated residual property value. The model currently incorporates a total of 27 theoretical development programs, but the number and nature of program options can be varied. An entitlement screen is necessary, as use types identified as having the greatest residual values may not be allowed under existing zoning. In the model, this is done using a matrix that evaluates whether or not the theoretical programs are allowable under the range of zoning codes in the study area. If the use is not allowed, the highest and best *allowed* use is determined.

Threshold for Development

Development/redevelopment activity is predicted by the model when the residual property value exceeds the property value under the existing use. If the residual value is greater than or equal to the market value of the property, it is assumed to represent a rational development or redevelopment opportunity. I.e. a developer can

purchase the property at current market value, for its new intended purpose which places a greater value on the site.

REDEVELOPMENT MODEL SCHEMATIC



While development and/or redevelopment is considered viable in these instances, it does not necessarily mean that it will be developed within the study time frame. There are a number of additional factors that impact redevelopment, and we assume that only a portion of opportunities identified as viable will be realized within the study horizon. The assumed rate of redevelopment should be based on historic trends in the study area, and is an input on the Initial Input Screen.

F. MEASURES OF DEVELOPMENT IMPACTS (OUTPUTS)

The development/redevelopment module is run under baseline assumptions as well as assumptions reflecting the proposed Tesoro facility, and the comparison of the two scenarios provides the basis for estimating the net impact of the facility.

The net impacts associated with the facility are broken down in multiple categories. This includes predicted levels of new development, redevelopment as well as investment in existing structures. To determine the net impacts, the model solves for the differential between the two scenarios. The unit of measure include:

- The dollar value of construction and investment activity in physical improvements.
- Projected net change in real market value in the study area associated with new construction
- Net change in square footage of commercial space, as well as residential units in the study area.

The model does not address the direct, indirect and induced impact of the construction activity funded.

G. BASELINE SCENARIO

The following page shows the estimate of development activity resulting from the assumed baseline scenario. This is the Model's output, resulting from the baseline assumptions of market conditions. The tables summarize the predicted development output for the "Baseline Scenario" of the study area.

- The table in the upper left shows the square footage of land area in each RMV/Residual ratio category.
- This total area is multiplied by the Development Probability.
- This produces the table just below, which is the bulk estimate of developable lands in the study area. In this example, the "< 0.75" category is multiplied by 20%. The categories where RMV/Residual is greater than 2.0 are determined to have low likelihood of redevelopment, so 0% of the land area in those categories pass through this screen.
- The determination of predicted development land area by zone is then compared to the highest and best economic use in those zones to estimate the amount of **construction investment**, **housing units** and **commercial space** resulting from that development.
- Finally, the change in **Real Market Value** is calculated both from new development, and renovation/reinvestment in existing properties.

As modeled, the Baseline Scenario forecast produced an estimate of:

- \$194.1 million in new construction investment
- 915 new housing units
- 387,000 square feet of commercial space
- \$224.7 million in new Real Market Value
- A net change of \$381.5 million in Real Market Value

This is an example of the Baseline Scenario outputs. The next steps in the model are to produce similar outputs for the Tesoro facility Scenario, then compare the two sets of results to judge what additional impact the Tesoro facility is predicted to have.

**PREDICTED DEVELOPMENT ACTIVITY – BASELINE SCENARIO
PREDICTIVE ECONOMIC DEVELOPMENT MODEL**

ZONING	SQUARE FEET OF LAND (Scale Adjusted)					Total
	RMV/Residual Category					
	<.75	.75-1.25	1.25-2.0	2.0-4.0	>4.0	
R-9	0	0	0	0	4,841,969	4,841,969
R-18	56,716	3,593	0	0	60,310	60,310
R-22	143,728	3,593	0	10,000	0	157,321
R-30	13,503	0	0	0	0	0
R-35	0	0	0	0	0	0
CN	7,500	0	0	0	7,500	7,500
IH	0	0	0	0	2,059,828	2,059,828
IL	179,026	39,203	44,866	0	0	263,094
OCI	337,661	119,788	53,615	0	0	511,063
CX	6,299,551	899,242	900,282	789,993	329,688	9,218,755
CC	575,510	427,353	298,614	69,302	1,301	1,372,080
Park	0	0	0	0	367,527	367,527
TOTAL	7,613,195	1,492,772	1,297,376	869,295	7,600,312	18,859,446

Dev.Probability	20%	15%	10%	0%	0%	10%

ZONING	LAND DEVELOPED/REDEVELOPED (SF)					Total
	RMV/Residual Category					
	<.75	.75-1.25	1.25-2.0	2.0-4.0	>4.0	
R-9	0	0	0	0	0	0
R-18	11,343	539	0	0	0	11,882
R-22	28,746	539	0	0	0	29,284
R-30	2,701	0	0	0	0	2,701
R-35	0	0	0	0	0	0
CN	1,500	0	0	0	0	1,500
IH	0	0	0	0	0	0
IL	35,805	5,880	4,487	0	0	46,172
OCI	67,532	17,968	5,361	0	0	90,862
CX	1,259,910	134,886	90,028	0	0	1,484,825
CC	115,102	64,103	29,861	0	0	209,066
Park	0	0	0	0	0	0
TOTAL	1,522,639	223,916	129,738	0	0	1,876,292

ZONING	Predicted Predominant Development Form	Predicted Development Yield		RMV/ Dev. or Rev.	Current RMV	Net Change in RMV
		Construction Investment	Residential Units			
R-9	N/A	\$0	0	0	\$0	\$0
R-18	3-story wood townhome	\$926,815	7	0	\$1,453,563	\$522,979
R-22	3-story wood townhome	\$2,284,190	17	0	\$3,582,394	\$1,065,354
R-30	3-story wood townhome	\$210,647	1	0	\$330,366	\$16,680
R-35	3-story wood townhome	\$0	0	0	\$0	\$0
CN	3-story wood townhome	\$117,000	0	0	\$183,496	\$65,180
IH	N/A	\$0	0	0	\$0	\$0
IL	office low rise	\$2,400,951	0	16,622	\$4,037,144	\$480,865
OCI	office low rise	\$4,724,812	0	32,710	\$7,944,663	\$1,093,720
CX	3-story wood townhome	\$115,816,326	890	0	\$181,639,746	\$51,740,135
CC	office mid/podium	\$67,653,871	0	337,642	\$87,767,526	\$7,300,345
Park	N/A	\$0	0	0	\$0	\$0
TOTAL	TOTAL/REHAB/RENOVATION	\$194,134,611	915	386,974	\$286,938,898	\$62,285,258
OVERALL TOTAL						\$224,653,641
						\$156,865,095
						\$381,518,735

Source: Johnson Reid LLC

H. RECONCILIATION BASELINE AND TESORO FACILITY SCENARIOS

The Scenario with the Tesoro facility utilized the same model, but with an assumption of a 15% reduction in achievable rent levels and a 10% increase in capitalization rates. The Model produces a Development Activity Output screen for the Tesoro Facility Scenario that matches that of the Baseline Scenario. The two scenarios are then compared to determine the net impact of the proposed facility.

The following table presents the comparison of results from the reconciliation. In this case, the new facilities construction and operation are expected to have a negative impact on all indicators, decreasing investment, production of housing and commercial space, and resulting change in Real Market Value.

RECONCILIATION OF BASELINE AND TESORO FACILITY SCENARIOS

BASELINE							
Predicted Predominant Development Form	Predicted Development Yield			RMV/ Dev. or Redev.	Current RMV	Net Change in RMV	
	Construction Investment	Residential Units	Commercial Space				
N/A	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$926,815	7	0	\$1,453,563	\$522,979	\$930,585	
3-story wood townhome	\$2,284,190	17	0	\$3,582,394	\$1,065,354	\$2,517,040	
3-story wood townhome	\$210,647	1	0	\$330,366	\$16,680	\$313,686	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
type v/podium	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$117,000	0	0	\$183,496	\$65,180	\$118,316	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
N/A	\$0	0	0	\$0	\$0	\$0	
office low rise	\$2,400,951	0	16,622	\$4,037,144	\$480,865	\$3,556,279	
office low rise	\$4,724,812	0	32,710	\$7,944,663	\$1,093,720	\$6,850,943	
3-story wood townhome	\$115,816,326	890	0	\$181,639,746	\$51,740,135	\$129,899,611	
MU res/ret 3-story wood w/surf LG	\$67,653,871	0	337,642	\$87,767,526	\$7,300,345	\$80,467,180	
N/A	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
TOTAL/NEW CONSTRUCTION	\$194,134,611	915	386,974	\$286,938,898	\$62,285,258	\$224,653,641	
TOTAL/REHAB/RENOVATION	\$156,865,095					\$156,865,095	
OVERALL TOTAL	\$350,999,706					\$381,518,735	

WITH OIL DEPOT OPERATIONS							
Predicted Predominant Development Form	Predicted Development Yield			RMV/ Dev. or Redev.	Current RMV	Net Change in RMV	
	Construction Investment	Residential Units	Commercial Space				
N/A	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$809,637	6	0	\$988,127	\$441,617	\$546,510	
3-story wood townhome	\$2,146,605	16	0	\$2,619,837	\$967,427	\$1,652,410	
3-story wood townhome	\$210,647	1	0	\$257,085	\$16,680	\$240,405	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
type v/podium	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$102,375	0	0	\$124,944	\$51,885	\$73,059	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
N/A	\$0	0	0	\$0	\$0	\$0	
office low rise	\$2,065,722	0	14,301	\$2,952,444	\$281,250	\$2,671,194	
office low rise	\$3,802,737	0	26,327	\$5,435,082	\$654,105	\$4,780,977	
3-story wood townhome	\$100,831,471	775	0	\$123,060,389	\$33,745,585	\$89,314,804	
MU res/ret 3-story wood w/surf LG	\$5,999,861	58	5,454	\$8,396,560	\$1,021,551	\$7,375,009	
N/A	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
3-story wood townhome	\$0	0	0	\$0	\$0	\$0	
TOTAL/NEW CONSTRUCTION	\$115,969,054	856	46,082	\$143,834,468	\$37,180,100	\$106,654,368	
TOTAL/REHAB/RENOVATION	\$136,761,173					\$136,761,173	
OVERALL TOTAL	\$252,730,227					\$243,415,541	

NET DIFFERENTIAL	(\$98,269,479)	-59	-340,892	(\$143,104,430)	(\$25,105,158)	(\$138,103,194)
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Source: Johnson Reid LLC

The following is a summary of predicted impacts in graphical form:

**SUMMARY OF MODEL OUTPUT
MAGNITUDE OF INVESTMENT AND RESIDUAL PROPERTY VALUES**



Exhibit F: Additional Environmental Factors

The following factors must also be fully assessed in the EIS for the Tesoro-Savage oil terminal:

- **Climate Change**

- *Scope 1:* Emissions from on-site natural gas-fired boilers, fugitive emissions from the oil storage tanks, emissions from the Marine Vapor Combustion Unit, emissions from the emergency diesel fire water pump engines, and fugitive leaks throughout the facility.
- *Scope 2:* emissions generated by the production of electricity purchased by the facility.
- *Scope 3:* At a minimum, all emissions generated with Washington State by the oil trains travelling to and from the Tesoro-Savage Facility, as well as emissions from the oil tanker ships travelling within the state's three mile nautical boundary.

- **Earth**

- *Erosion:* From storage tank construction and operations into the adjacent Parcel 1A wetlands mitigation site, a 7.9 acre "depressional, palustrine forested wetland (PFO)." ASC at 3-313.

- **Habitat**

- *Shoreline and fish habitat:* Impacts to the shoreline from improvements to shipping terminal, and associated impacts on fish habitat and other near-shore riparian habitat.
- *Parcel 1A Wetlands Mitigation Area:* Erosion, stormwater runoff, emissions and noise impacts on the Parcel 1A wetlands mitigation site, located immediately east of Parcel 1A where the oil storage tank farm will be located, including surveys for waterfowl (including mallard ducks, pintail, wigeon, merganser, gadwalls, green-winged teal, Canada goose, and snow goose), bald eagles, sandhill cranes, great blue herons, as well as reptiles and amphibians that may be present in the wetlands area.

- **Water**

- *On-Site Stormwater Runoff:* From the Port of Vancouver site into the Parcel 1A wetlands area, as well as into the Columbia River.

- *Railroad Stormwater Runoff*: From the railroad line to the Columbia River, and the directly into waterways crossed by the rail line through drips and leaks from oil trains.
- *Oil Spill Impacts*: Risk of catastrophic oil spill along the entire length of the train route, from the oil terminal facility, or during shipping in the Columbia River of the Pacific Ocean, including impacts on aquatic ecology, bird populations, and the economy, including commercial and recreational fishing, the shipping industry, tourism, agriculture, and municipal water supplies.
- **Recreation**
 - *Waterborne Recreation*: Impact of additional large vessel traffic in the Columbia River on waterborne recreation, including recreational fishing.
- **Transportation**
 - *Rail Congestion*: Impacts on other users of Pacific Northwest railroads, including grain and fruit shippers, intermodal users, ports, industries, aircraft manufacturers and passenger rail, given reports indicating that the railroad prioritizes unit trains, such as oil trains, over other shippers.
 - *Vessel Traffic*: Impacts on navigation from additional oil tanker traffic, particularly at the Columbia Bar Crossing and other restrictions to vessel movement.