

April 9, 2013

Senator Len Fasano

Legislative Office Building

300 Capitol Avenue

Hartford, CT 06106

**Issue: M.O.R.E. Subcommittee Meeting of April 2, 2013**

**Land Value Taxation (LVT) in relation to Surface vs. Structured Parking Lots**

Dear Senator Fasano:

In response to your inquiry of the costs related to surface parking lots vs. structured parking lots, Joshua Vincent and I have found that structured parking lots become cost-effective when land prices exceed approximately \$1 million per acre.

Attached is a copy of the report the *Center for the Study of Economics (CSE)* has authorized be provided to you. As you will see, the municipality chosen for this study was Downtown New Haven, CT since your request for information was based on that city was expressed at the April 2nd meeting.

Thank you for your time during the April 2<sup>nd</sup> M.O.R.E. Subcommittee Meeting. We are hopeful the attached report provides you with the additional information you sought. Should you have any questions or need further information related to *LVT*, I am easiest to reach directly on my cell 480-282-1280 or via email at the address listed below.

Best regards,

Mark Speirs

Regional Director, CSE

<mailto:mark@urbantools.org>

Enclosure: 1

# Comparing surface parking and parking garage costs in an urban environment

Over the past fifty years in many Connecticut cities, much of the urban built environment has been dismantled to accommodate parking. Meanwhile, automobile use has increased by almost 40 percent while transit use, biking, and walking have dropped by 45 to 55 percent ( *Christopher T. McCahill, Losing Hartford: Transportation policy and the decline of an American city, New Urbanism: Rx for Healthy Places, May 21, 2010*). Since this situation will not reverse itself anytime soon, the question is often asked, what is the best urban parking strategy? Below we compare the cost of ownership of two urban parking choices, surface parking and structure parking.

## Breakdown of Average Costs U.S.

### Land Costs

Land costs can vary from thousands of dollars per acre in rural areas to millions of dollars per acre in central business districts (CBDs).

### Construction Costs

Parking facility construction costs are affected by size per space, size and shape of site (small and irregular shaped sites increase unit costs), number of levels (more levels increase unit costs), topography (slopes and poor soil conditions increase costs), design (exterior aesthetic treatments can increase costs), and geographic location. Overall, U.S. parking structure construction costs are reported to average about \$15,000 per space or \$44 per square foot in 2008

### Operation and Maintenance

Operation and maintenance costs include cleaning, lighting, maintenance, repairs, security, landscaping, snow removal, access control (e.g., entrance gates), fee collection (for priced parking), enforcement, insurance, labor and administration. Parking facilities require resurfacing and repaving every 5-10 years, and parking structures require major reconstruction or replacement after 20-40 years, with higher maintenance costs in areas with harsh climates, particularly with frequent salt exposure.

### Total Parking Costs

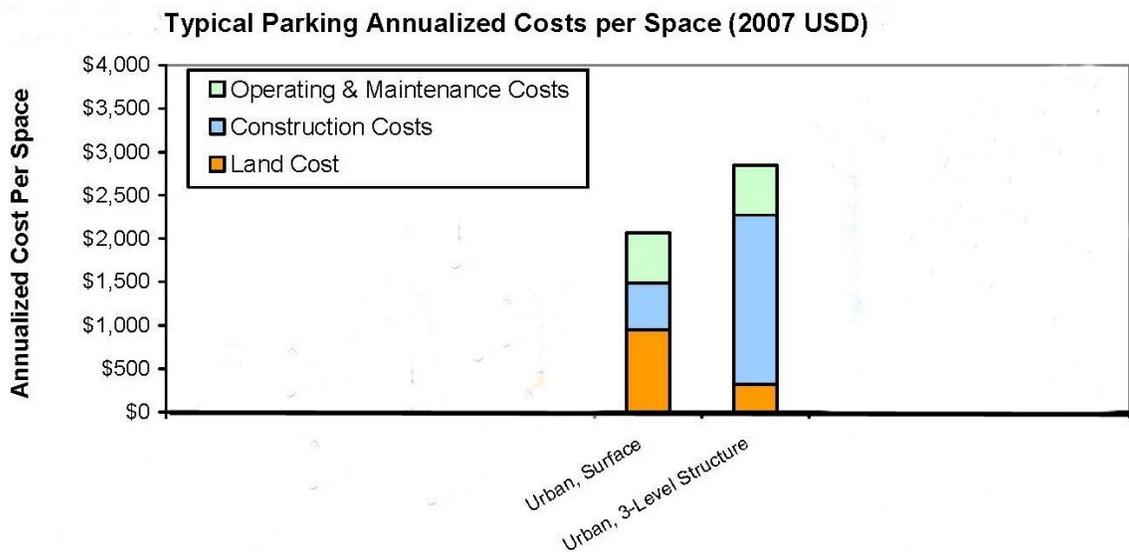
The table below illustrates typical parking facility financial costs per space. These do not include indirect and environmental costs.

*Source: Transportation Cost and Benefit Analysis II – Parking Costs, Victoria Transport Policy Institute, VTPI (2006).*

Using US averages in the table below, it can be seen that the major cost differences between surface urban parking lots and structure parking lots is the land costs and construction costs. Looking at the annualized (recalculated as a yearly rate) land and construction costs show that land costs for a surface parking lot are going to increase proportionally to the number of parking decks in the garage it is being compared against. Calculating construction cost is more difficult because of the number of variables involved but on average structure parking has 3 to 5 times the construction cost of surface parking.

Type of Facility	Land Cost Per Acre	Annualized Land Cost Per Space	Annualized Construction Costs	Annual O & M Costs	Total Annual Cost	Total Monthly Cost
Urban, Surface	\$1,200,000	\$944	\$543	\$575	\$2,062	\$172
Urban, 3-Level Structure	\$1,200,000	\$315	\$1,954	\$575	\$2,844	\$237

This chart is based on the table above. It more clearly shows the differences between land and construction costs for both types of parking.



Source: *Transportation Cost and Benefit Analysis II – Parking Costs*, Victoria Transport Policy Institute, VTPI (2006).

# New Haven Comparison of Surface Parking and Parking Garage Costs

*These numbers were derived by the Center for the Study of Economics utilizing the Victoria Transport Policy Institute formulas employed in the above table.*

The following estimates were derived using these variables. The land costs are the average land acquisition costs in the Crown St. area of downtown New Haven. The land value tax mill rates were derived using formulas to increase the land tax to three times the building tax. This is a fairly robust land value tax and it should be noted that any change this strong would be phased in over a period of years.

<u>General Data</u>	<u>Urban</u>	<u>Notes</u>
Land Costs (per acre)	\$1,470,000	Average land acquisition costs in the Crown St area of New Haven
Surface Spaces Acre	120	This is the number of parking spaces per acre of surface area (including landscaping and access lanes).
Interest Rate	6%	Interest rate for long-term capital investments.
Years of Payments	20	Years of payments.
Avg Days of Use Per Month	20	Typical number of days that parking space can be rented each month.
Parking Lot Size	.75 acres	Lot size for surface parking and footprint for parking garage
<u>Tax Data</u>	<u>Standard</u>	<u>LVT</u>
Mill Rate	38.88	.133 land .012 bldg
Bldg to Land Ratio	3:1	1:3

## Annualized Cost per Space New Haven, Connecticut

**Table of Annualized Cost per Space with Standard Property Tax, New Haven**

Type of Facility	Annualized Land Cost Per Space	Annualized Construction Costs	Annual O & M Costs	Annual Property Tax	Total Annual Cost	Monthly Cost
Urban, Surface	\$1,068	\$436	\$500	\$128	\$2,132	\$178
Urban, 3-Level Structure	\$356	\$1,569	\$600	\$292	\$2,817	\$235

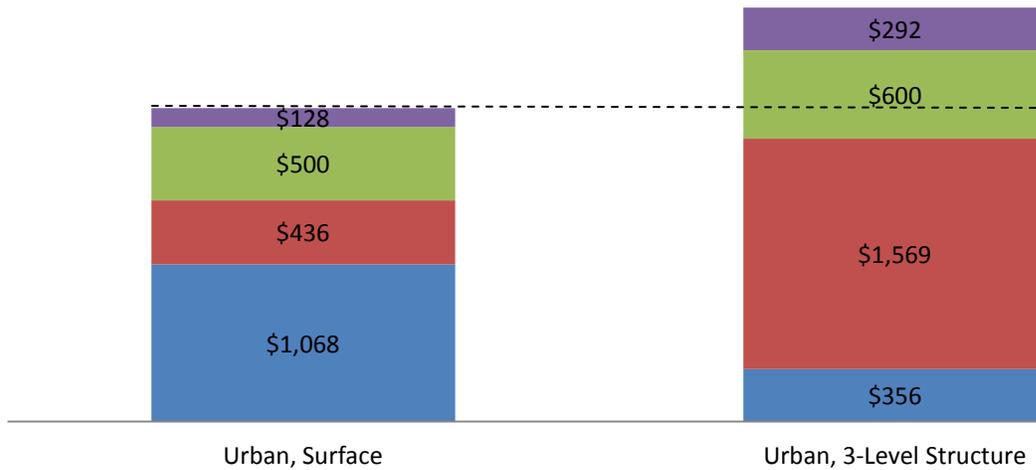
**Table of Annualized Cost per Space with Land Value Tax, New Haven**

Type of Facility	Annualized Land Cost Per Space	Annualized Construction Costs	Annual O & M Costs	Annual Property Tax	Total Annual Cost	Monthly Cost
Urban, Surface	\$1,068	\$436	\$500	\$436	\$2,440	\$203
Urban, 3-Level Structure	\$356	\$1,569	\$600	\$222	\$2,747	\$229

The above tables show the changing total annual cost and monthly cost for standard vs. LVT property tax. When changing to a land value tax the annual property tax on surface parking increases 241% from \$128 to \$436 per space, and the annual property tax on structure parking decreases 32% from \$292 to \$222 per space. This results in an increase in total annual costs of surface parking of 14% and a decrease in annual cost of structure parking of 3%.

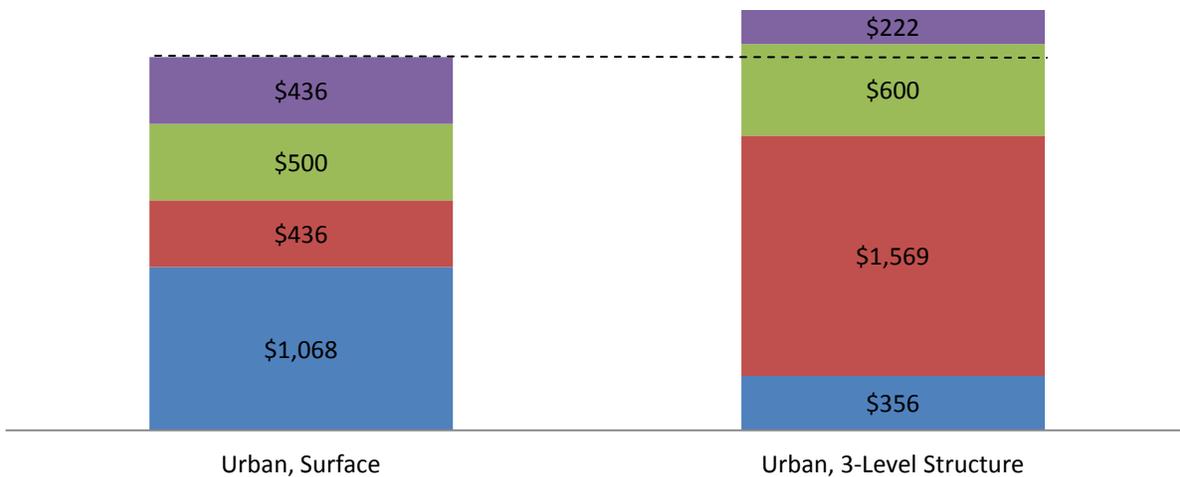
## Annualized cost per space standard tax

■ Annualized Land Cost Per Space 
 ■ Annualized Construction Costs  
■ Annual O & M Costs 
 ■ Annual Property Tax



## Annualized cost per space LVT

■ Annualized Land Cost Per Space 
 ■ Annualized Construction Costs  
■ Annual O & M Costs 
 ■ Annual Property Tax



These charts are based on the table above. As the dotted line shows, while in this model a land value tax will not bring parking costs for surface parking below that of structure parking, it does decrease the cost differential.

## RSMeans Data



### Construction Cost Estimates for Parking Garage in New Haven, Connecticut

The following analysis estimates the cost to build a **parking garage** for New Haven, Connecticut. Costs are derived from a building model that assumes basic components, using union labor for a 145000 square foot building.

Scope differences and market conditions can cause costs to vary significantly. To see an estimate of the costs to build a parking garage in a different city or metropolitan area, go to our [index of parking garage models by state](#).

NOTE: This cost estimate uses **2008 RSMeans data**. A more accurate estimate using current RSMeans cost data is available on [RSMeans Online](#) - our online cost estimating tool.

Parking Garage Construction Cost Assumptions	
Location:	New Haven,
Stories:	5
Story Height (L.F.):	10.00
Floor Area (S.F.):	145000
Labor Type:	Union
Basement Included:	No
Data Release:	Year 2008

#### SQUARE FOOT COST ASSUMING FACE BRICK WITH CONCRETE BLOCK BACK-UP / R/CONC. FRAME

Cost Estimate (Union Labor)	% of Total	Cost Per SF	Cost
Total		\$33.87	\$4,911,500
Contractor Fees (GC,Overhead,Profit)	25%	\$8.47	\$1,227,875
Architectural Fees	6%	\$2.03	\$294,690
User Fees	0%	\$0	\$0
<b>Total Building Cost</b>		<b>\$44.37</b>	<b>\$6,434,065</b>

Cost Estimate (Open Shop)	% of Total	Cost Per SF	Cost
Total		\$30.99	\$4,493,000
Contractor Fees (GC,Overhead,Profit)	25%	\$7.75	\$1,123,250
Architectural Fees	6%	\$1.86	\$269,580
User Fees	0%	\$0	\$0
<b>Total Building Cost</b>		<b>\$40.59</b>	<b>\$5,885,830</b>

Source: <http://www.reedconstructiondata.com/rsmeans/models/garage/connecticut/new-haven/>

This Means estimate shows more clearly why surface parking and structure parking costs are closer than some might think. Looking at this Means estimate for a 145,000 sq ft 5 story parking garage in New Haven shows a cost of approximately \$6,000,000. This garage would sit on a lot of approximately .75 acres. Using the Crown St. per acre average of \$1,470,000, .75 acres would cost \$1,100,000. The 5 story parking garage would need 1 of these lots. The surface parking would need 5 of these at \$1,100,000 per amounting to a total land cost of \$5,500,000. This number is not far from the \$6,000,000 construction cost (not including land) of the garage. While the surface parking is still less expensive, it is not large enough to completely eliminate structure parking from the discussion for an investor.

## Conclusion

Structured parking involves a trade-off between construction and land costs. Structured parking typically becomes cost effective when land prices exceed about \$1 million per acre (*Source: Transportation Cost and Benefit Analysis II – Parking Costs, Victoria Transport Policy Institute, VTPI (2006)*). The above study was based on two simple and likely scenarios. A complete study would involve looking at many more variables that would affect those costs such as different land cost scenarios and different parking structure level scenarios (all examples above used a 3 story parking deck).

While a land value tax in the examples above does not bring parking costs for surface parking below that of structure parking, it does decrease the cost differential. Using the formulas from the Victoria Transport Policy Institute for these examples, with a standard property tax the cost per space for structured parking in New Haven is 32% more than surface parking. The land value tax is able to decrease that difference to 13%. Because of the many other variables involved in determining which type of model is most profitable, what can be surmised from this study is that a developer or investor is more likely to consider building a parking structure over surface parking if the municipality in question has a land value tax rather than a standard property tax in place.