Annual Costs of Vehicle Economy in Hawai‘i

Kathleen Rooney
Director of Transportation Policy & Programs
Committed to a **sustainable, resilient** Hawai‘i, we invest, educate and advocate to support:

### Local Food
- DA BUX Double Up Food Bucks
- Farm Link Hawai‘i
- Farm-to-School
- Hawai‘i ‘Ulu Cooperative
- OI-HPU Feed Mill

### Water & Waste
- Aloha Harvest
- Fresh Water Initiative
- Re-use Hawai‘i
- WAI: Wastewater Alternatives & Innovations

### Renewable Energy
- BioEnergy Hawai‘i
- Carbon Lighthouse
- ClearFuels
- Ibis Networks
- Performance-Based Regulation
- SolarCity

### Clean Transportation
- Ala Moana Parking Study
- Biki/Bikeshare Hawai‘i
- Drive Electric Hawai‘i
- Quick Builds
- Volta Charging
We can’t become self-sufficient without tackling ground transportation

VMT is on the rise and projected to rise more

Average 9,400 per capita per year

Source: DBEDT Databook and Hawai‘i Open Data, 2020
Why deal with VMT?

- Road Pricing, 49%
- Parking, 29%
- More Density in Low-VMT Areas, 16%
- Street Connectivity and Design, 4%
- New Transit, 2%
- Increased Mixed Use, 1%

Transcending Oil: Hawai‘i’s Path to a Clean Energy Economy: [https://elementalexcelerator.com/transcending-oil/](https://elementalexcelerator.com/transcending-oil/)
The original vehicle economy extrapolation

**Massachusetts**
- **$64.1 billion/year**
- 77,500 lane miles
- 6.9 million people

**Hawai‘i**
- **$8-13 billion/year (est.)**
- 9,700 lane miles
- 1.4 million people

**$4-7 billion/year (est. public funds)**
Definition

*The vehicle economy includes:* “All roadways, vehicles, and transportation infrastructure costs (e.g., bridges, on-off ramps, signs, speedbumps, parking) as well as the associated costs of pollution and congestion that result from the use of the ground transportation system”
Hawai‘i study framework

- Comprehensive
- Easy and defensible
- Hawai‘i-based
- Replicable
Table 13. Cost Component Methodology

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Costs</th>
<th>Quantification/Monetization Steps</th>
<th>Source</th>
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<tbody>
<tr>
<td>Public Borne Costs</td>
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<td><strong>Direct Public Budgetary Costs</strong></td>
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<td>• Road maintenance expenditures</td>
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<td>• Vehicle registration &amp; licensing</td>
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<td>• Road &amp; highway beautification</td>
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<td>• State Capital Improvement Program funding</td>
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<td>• Average costs for each item from each county for the 5 most recent years available(^{36})</td>
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<td>• Average state budget costs for Hawai’i, Honolulu, Kaua’i, and Maui highways for the 5 most</td>
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<td>recent years available(^{36})</td>
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<td>• Average annual capital improvement program disbursements from the FHWA for the 5 most</td>
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<td>recent years available(^{37})</td>
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<td>• Multiply the capital improvement program disbursements from FHWA by 70% to identify the state</td>
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<td>and local match</td>
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<td>• City and County of Honolulu, “The Executive Program and Budget Fiscal Year 2020: Volume 1—</td>
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<td>Operating Program &amp; Budget”, 2019</td>
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<td>• Kaua’i County, “Annual Operating Budget Ordinance,” 2020</td>
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<td>• Maui County, “FY 2020 Council Adopted Budget,” n.d.</td>
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<td>State budget file:</td>
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<td>• State of Hawai’i Department of Budget and Finance, “Executive</td>
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</table>
Annual Costs of the
Vehicle Economy
in Hawaiʻi

Public-Borne Costs, $11.2 Billion

Consumer-Borne Costs, $10.6 Billion

Total Cost $21.8B

Consumer Vehicle Ownership $6.4B ($791,884)
Consumer Parking Subsidy $1.259B
Greenhouse Gas $0.25B
Injuries & Fatalities $0.25B
Deferred Maintenance $0.25B
Congestion $0.25B

Direct Budgetary Costs $223M
State Capital Improvements $23M
County Budget $195M
State Budget $32M

Indirect Social & Economic Costs $2.25B
Deferred Maintenance $503M
Injuries & Fatalities $407M
Congestion $303M

Land Value Costs $6.38B
Residential Parking $1.47B
Land Use Value $1.259B
Pollution $0.25B

Public parking $0.25B

Consumer-borne costs per island:
Honolulu: $682.9M (66.87%)
Kauai: $162M (15.89%)
Maui: $662.9M (63.87%)

Vehicle Ownership per island:
Honolulu: 374,431 (27.92%)
Kauai: 11,492 (0.85%)
Maui: 60,622 (4.48%)

Number of registered vehicles and cost per island:
Honolulu: 374,431 ($4.4B)
Kauai: 11,492 ($0.25B)
Maui: 60,622 ($0.25B)

Residential Parking Land Value:
Honolulu: $1.47B / 2,477 Acres
Kauai: $0.44B / 1,040 Acres
Maui: $0.25B / 2,230 Acres

Hawaii: $54.3M
Honolulu: $161.6M
Kauai: $27M
Maui: $30.8M

Total Land Use Value:
Hawaii: $86.4M
Honolulu: $176.9B
Kauai: $100.9B
Maui: $229.9M

Total Land Value:
Hawaii: $526.8M
Honolulu: $1.45B
Kauai: $567.7M
Maui: $1.1B

Total Parking:
Hawaii: 1.47B
Honolulu: 2.4B
Kauai: 0.9B
Maui: 1.0B

Annual Costs of the Vehicle Economy in Hawaiʻi
## County-based vehicle economies

<table>
<thead>
<tr>
<th>County</th>
<th>Cost (Millions of $)</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Honolulu</td>
<td>$14,340.8</td>
<td>66%</td>
</tr>
<tr>
<td>Hawaiʻi</td>
<td>$3,118.9</td>
<td>14%</td>
</tr>
<tr>
<td>Maui</td>
<td>$2,957.7</td>
<td>14%</td>
</tr>
<tr>
<td>Kauaʻi</td>
<td>$1,383.3</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>$21,800.7</td>
<td>100%</td>
</tr>
</tbody>
</table>
## Public Costs – $11.2 billion or 51.2%

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-Category</th>
<th>Cost (Millions of $)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Budgetary Costs</strong></td>
<td>County Budgets</td>
<td>$273.7</td>
<td></td>
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<tr>
<td></td>
<td>State Budgets</td>
<td>$505.7</td>
<td></td>
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<td></td>
<td>State Capital Improvement Program (CIP)*</td>
<td>$252.6</td>
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<td></td>
<td>Deferred Maintenance</td>
<td>$560.2</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$1,592.2</strong></td>
<td><strong>14%</strong></td>
</tr>
<tr>
<td><strong>Indirect Social &amp; Economic Costs</strong></td>
<td>Injuries and Fatalities</td>
<td>$3,256.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Congestion</td>
<td>$693.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumer Parking Subsidy</td>
<td>$1,259.9</td>
<td></td>
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<tr>
<td></td>
<td>Greenhouse Gas Emissions</td>
<td>$209.8</td>
<td></td>
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<tr>
<td></td>
<td>Pollution</td>
<td>$222.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$5,641.4</strong></td>
<td><strong>51%</strong></td>
</tr>
<tr>
<td><strong>Land Value Costs</strong></td>
<td>Parking</td>
<td>$2,187.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roads</td>
<td>$1,738.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$3,925.8</strong></td>
<td><strong>35%</strong></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>$11,159.4</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Public costs – $11.2 billion or 51.2%

• Direct public costs are the smallest percent

• User fees only cover 49% of the public expenditures

• $15,000 per taxpayer or $24,400 household

• Maintenance backlog is 2x state CIP and growing
Private costs – $10.68 billion or 48.8%

- Synthetic population for the vehicle model
- Personal costs
  - $8,100 per vehicle
  - $16,200 per household
Individual Household Impacts

- Total household costs $31,200
- 39% of pre-tax income of median household income
Conclusions

• Full costs matter

• Unsustainable investment strategy

• “Land is expensive for people but not for cars”

• Transportation is a huge part of our cost of living
Annual Costs of the Vehicle Economy in Hawai‘i

- **Public-Borne Costs, $11.2 Billion**
  - State Budget: $7.8B
  - County Budgets:
    - Honolulu: $16.16M
    - Kaua‘i: $2.7M
    - Maui: $3.08M
  - State Capital Improvements: $793.4M
  - Deferred Maintenance Costs: $533M
  - Indirect Social & Economic Costs:
    - Injuries & Fatalities: $2.25B
    - Congestion: $503M
    - Consumer Parking Subsidy: $1.259B
    - Greenhouse Gas: $224M
    - Pollution: $82M
    - Public parking: $2.2B
  - Local Use Value:
    - Honolulu: $1.769B
    - Kaua‘i: $1.09M
    - Maui: $229.9M
  - Land Value Costs: $2.18B
  - Parking Land Value:
    - Honolulu: $1.92B
    - Kaua‘i: $39.5K Plg. Stalls / 2,230 Acres
    - Maui: $39.5K Plg. Stalls / 2,230 Acres
  - Hawaii: $33.7M
  - Honolulu: $132.1M
  - Kaua‘i: $8.0M
  - Maui: $86.5M
  - Hawaii: $1.75B
  - Kaua‘i: $51.8M
  - Maui: $31.2M

- **Consumer-Borne Costs, $10.6 Billion**
  - Number of registered vehicles and cost per island:
    - Honolulu: 156,908
    - Kaua‘i: 77,188
    - Maui: 77,188
  - Consumer Vehicle Ownership:
    - Honolulu: $16,928
    - Kaua‘i: $16,489
    - Maui: $7,928
  - Total Cost: $21.8B

- **Residential Parking Land Value**
  - Honolulu: $1.2B
  - Kaua‘i: $100.9M
  - Maui: $229.9M

- **Residential Parking Land Value**
  - Honolulu: 251.6K Plg. Stalls / 1,040 Acres
  - Kaua‘i: 251.6K Plg. Stalls / 9.87 Acres
  - Maui: 251.6K Plg. Stalls / 2,230 Acres

- **Annual Costs of the Vehicle Economy**
  - Hawaii: $54.3M
  - Honolulu: $161.6M
  - Kaua‘i: $27M
  - Maui: $30.8M

**Ulupono Initiative**

**ICF**
Why was our original extrapolation under?

• Land values are more expensive
• Vehicle costs more expensive
• Direct and complete jurisdiction costs