



# Appendix E

---

## Energy Calculations



**Construction Worker Gasoline Demand**

<b>Phase</b>	<b>Trips</b>	<b>Vehicle CO<sub>2</sub> (MT)</b>	<b>Kg/CO<sub>2</sub>/Gallon</b>	<b>Gallons</b>
<i>Village West Drive Extension</i>				
Grubbing/Land Clearing	80	0.36	8.78	40.49
Grading/Excavation	900	4.00	8.78	455.56
Drainage/Utilities/Subgrade	720	3.20	8.78	364.45
Paving	240	1.07	8.78	121.48
<i>Meridian South Campus</i>				
Site Preparation	1,350	6.00	8.78	683.34
Grading	2,000	8.89	8.78	1,012.36
Building Construction	1,279,500	5353.72	8.78	609,763.29
Paving	1,650	6.55	8.78	746.53
Architectural Coating	150,040	603.55	8.78	68,740.90
<b>Total</b>				<b>681,928.39</b>

**Construction Vendor Diesel Demand**

<b>Phase</b>	<b>Trips</b>	<b>Vehicle CO<sub>2</sub> (MT)</b>	<b>Kg/CO<sub>2</sub>/Gallon</b>	<b>Gallons</b>
<i>Village West Drive Extension</i>				
Grubbing/Land Clearing	0	0.00	10.21	0.00
Grading/Excavation	0	0.00	10.21	0.00
Drainage/Utilities/Subgrade	0	0.00	10.21	0.00
Paving	0	0.00	10.21	0.00
<i>Meridian South Campus</i>				
Site Preparation	0	0.00	10.21	0.00
Grading	0	0.00	10.21	0.00
Building Construction	517,500	6171.18	10.21	604,425.48
Paving	0	0.00	10.21	0.00
Architectural Coating	0	0.00	10.21	0.00
<b>Total</b>				<b>604,425.48</b>

**Construction Haul Diesel Demand**

Phase	Trips	Vehicle CO <sub>2</sub> (MT)	Kg/CO <sub>2</sub> /Gallon	Gallons
<i>Village West Drive Extension</i>				
Grubbing/Land Clearing	0	0.00	10.21	0.00
Grading/Excavation	0	0.00	10.21	0.00
Drainage/Utilities/Subgrade	0	0.00	10.21	0.00
Paving	0	0.00	10.21	0.00
<i>Meridian South Campus</i>				
Site Preparation	0	0.00	10.21	0.00
Grading	0	0.00	10.21	0.00
Building Construction	0	0.00	10.21	0.00
Paving	0	0.00	10.21	0.00
Architectural Coating	0	0.00	10.21	0.00
<b>Total</b>				<b>0.00</b>

**Construction Equipment Diesel Demand**

Phase	Pieces of Equipment	Equipment CO <sub>2</sub> (MT)	Kg/CO <sub>2</sub> /Gallon	Gallons
<i>Village West Drive Extension</i>				
Grubbing/Land Clearing	2	5.19	10.21	508.76
Grading/Excavation	12	106.63	10.21	10,443.70
Drainage/Utilities/Subgrade	10	76.52	10.21	7,494.63
Paving	7	13.06	10.21	1,279.47
<i>Meridian South Campus</i>				
Site Preparation	7	189.43	10.21	18,552.95
Grading	8	314.16	10.21	30,769.46
Building Construction	9	1398.18	10.21	136,942.31
Paving	6	110.15	10.21	10,788.03
Architectural Coating	1	37.45	10.21	3,667.75
<b>Total</b>				<b>220,447.06</b>

### Construction Equipment Usage

<b>Phase</b>	<b>Hours of Equipment Use</b>
<i>Village West Drive Extension</i>	
Grubbing/Land Clearing	128
Grading/Excavation	2,400
Drainage/Utilities/Subgrade	1,920
Paving	560
<i>Meridian South Campus</i>	
Site Preparation	4,200
Grading	6,400
Building Construction	54,000
Paving	5,280
Architectural Coating	1,760
<b>Total</b>	<b>76,648</b>

**Mobile Source Gasoline Demand**

<b>Fuel Type</b>	<b>Vehicle MT CO<sub>2</sub></b>	<b>Kg/CO<sub>2</sub>/Gallon</b>	<b>Gallons</b>
Gasoline	-6,411.83	8.78	-730,276
Diesel	24,410.69	10.21	2,390,861
		Total	1,660,585

**Cargo-handling equipment**

<b>Equipment Type</b>	<b>Fuel Type</b>	<b>MT CO<sub>2</sub></b>
Yard Tractors	GNG	558.4649

**Building Use**

	<b>Electricity</b>	<b>NG</b>
<b>Proposed Project Land Uses</b>	<b>kWh/yr</b>	<b>kbtu/yr</b>
City Park	0.00	0.00
General Office Building	1,732,080.00	942,867.00
Office Park	2,325,540.00	1,079,680.00
Other Asphalt Surfaces	0.00	0.00
Refrigerated Warehouse - No Rail	21,098,000.00	35,553,000.00
Refrigerated Warehouse - Rail	822,400.00	1,144,000.00
Regional Shopping Center	1,174,720.00	363,086.00
Supermarket	1,398,220.00	948,868.00
Unrefrigerated Warehouse - No rail	1,269,500.00	1,765,940.00
Unrefrigerated Warehouse - Rail	282,121.00	392,445.00
<b>Proposed Project Land Uses</b>	<b>30,102,581.00</b>	<b>42,189,886.00</b>
	<b>Electricity</b>	<b>NG</b>
<b>Built/Entitled Land Uses</b>	<b>kWh/yr</b>	<b>kbtu/yr</b>
Other Asphalt Surfaces	0.00	0.00
Refrigerated Warehouse - No Rail	2,360,000.00	2,030,000.00
Regional Shopping Center	195,576.00	34,376.70
Unrefrigerated Warehouse - No rail	1,180,000.00	1,015,000.00
Unrefrigerated Warehouse - Rail	2,360,000.00	2,030,000.00
<b>Built/Entitled Land Uses Total</b>	<b>6,095,576.00</b>	<b>5,109,376.70</b>
<b>Proposed Project + Built/Entitled Land Uses Total</b>	<b>36,198,157.00</b>	<b>47,299,262.70</b>

	Electricity	NG
2003 Approved South Campus	kWh/yr	kbtu/yr
City Park	0.00	0.00
General Office Building	1,338,230.00	487,778.00
Industrial Park	43,126,400.00	15,719,400.00
Manufacturing	2,188,540.00	7,005,490.00
Regional Shopping Center	1,375,410.00	241,758.00
Research & Development	17,138,800.00	54,845,100.00
Unrefrigerated Warehouse - No rail	3,255,010.00	2,799,860.00
<b>2003 Approved South Campus Total</b>	<b>68,422,390</b>	<b>81,099,386.00</b>
<b>Net Proposed Project</b>	<b>-32,224,233</b>	<b>-33,800,123.30</b>

Total Electricity - Proposed Project	kWh/yr
Building Use	-32,224,233.00
Water/Wastewater	-688.26
<b>Total</b>	<b>-32,224,921.26</b>

#### Electricity Intensity Factors - Water/Wastewater

Process	Units	Value
Supply	kwh/MG	9,727
Treat	kwh/MG	111
Distribute	kwh/MG	1,272
Wastewater Treatment	kwh/MG	1,911
<b>Total</b>	<b>kwh/MG</b>	<b>13,021</b>

\* Electricity intensity factors from CalEEMod Appendix D for Riverside - South Coast County

#### Electricity Demand - Water/Wastewater

	Units	Potable Water - Indoor	Potable Water - Outdoor	Total
<b>Electricity Intensity Factor</b>				
Supply	kwh/MG	9,727	9,727	N/A
Treat	kwh/MG	111	111	N/A
Distribute	kwh/MG	1,272	1,272	N/A
Wastewater Treatment	kwh/MG	1,911	-	N/A
<b>Total</b>	<b>kwh/MG</b>	<b>13,021</b>	<b>11,110</b>	<b>N/A</b>
<b>Water Consumption - Proposed Project</b>				
Proposed Project + Built/Entitled	MG/yr	1,554	118	1,672
2003 Approved South Campus	MG/yr	2,279	81	2,360
<b>Electricity Usage - Net Proposed Project</b>	<b>kwh/yr</b>	<b>-726</b>	<b>38</b>	<b>-688</b>

	<b>Indoor Water</b>	<b>Outdoor Water</b>
<b>Proposed Project Land Uses</b>	<b>Mgal/yr</b>	<b>Mgal/yr</b>
City Park	0.00	7.39
General Office Building	68.96	42.27
Office Park	94.07	57.65
Other Asphalt Surfaces	0.00	0.00
Refrigerated Warehouse - No Rail	161.88	0.00
Refrigerated Warehouse - Rail	285.58	0.00
Regional Shopping Center	16.40	10.05
Supermarket	7.56	0.23
Unrefrigerated Warehouse - No rail	285.58	0.00
Unrefrigerated Warehouse - Rail	285.58	0.00
<b>Proposed Project Land Uses Total</b>	<b>1205.60</b>	<b>117.59</b>
	<b>Indoor Water</b>	<b>Outdoor Water</b>
<b>Built/Entitled Land Uses</b>	<b>Mgal/yr</b>	<b>Mgal/yr</b>
Other Asphalt Surfaces	0.00	0.00
Refrigerated Warehouse - No Rail	115.63	0.00
Regional Shopping Center	1.15	0.70
Unrefrigerated Warehouse - No rail	115.63	0.00
Unrefrigerated Warehouse - Rail	115.63	0.00
<b>Built/Entitled Land Uses Total</b>	<b>348.02</b>	<b>0.70</b>
<b>Proposed Project + Built/Entitled Land Uses Total</b>	<b>1553.62</b>	<b>118.30</b>
	<b>Indoor Water</b>	<b>Outdoor Water</b>
<b>2003 Approved South Campus</b>	<b>Mgal/yr</b>	<b>Mgal/yr</b>
City Park	0.00	60.47
General Office Building	24.98	15.31
Industrial Park	1047.58	0.00
Manufacturing	49.86	0.00
Regional Shopping Center	8.07	4.94
Research & Development	830.01	0.00
Unrefrigerated Warehouse - No rail	318.95	0.00
<b>2003 Approved South Campus Total</b>	<b>2279.45</b>	<b>80.72</b>
<b>Net Proposed Project</b>	<b>-725.83</b>	<b>37.57</b>