

Assumptions

Growth and Discount Rates

Inflation Factor - Labor	3.2%
Inflation Factor - CPI	2.0%
Discount Rate all but CO2 emissions	7%
CO2 emissions discount rate	3%

Year	Weekly Earnings	Hourly Earnings	Source:
2006	567.87	16.76	ftp://ftp.bls.gov/pub/suppl/empsit.ceseeb2.txt Bureau of Labor Statistics; Private Employment Earnings
2009	624.29	18.58	
	3.2%	3.5%	

Time Value Assumptions

Value per hour saved	\$24.64
----------------------	---------

Construction Estimates

Grant request amount	\$79,900,000
Percent to labor	60%
Percent to supplies	40%
Expenditures per labor job	\$92,000

Job Densities

Office sf per employee	800
Business park/Industrial jobs per acre	8.00
Annual wage	\$45,000
Business park acres absorbed per yr	5
Percent of absorption facilitated by overpass and incubators	50%

Land Values

Average residential land value per acre	\$205,316
Average industrial land value per acre	\$367,866
Actual increase in land value per acre	\$162,550

I-O Model - construction supplies

Additional wages paid	\$27,274,810
Additional jobs created	1,217

Oil/Gasoline Impacts

Gallons saved per year	472
Oil savings per gallon	\$0.381

Emissions

Sulphur dioxide per ton	\$16,000
Particulates per ton	\$168,000
Nitrogen oxide per ton	\$4,000
Carbon dioxide per metric ton	\$2

UVU

	Number of Jobs	Avg Wage
Faculty jobs created	20	\$60,783
Staff jobs created	20	\$40,551

Accident Value - payback period of 5 yrs

Moderate accident - MAIS2	\$157,958
Accidents per year	8

FEDERAL GOVERNMENT GUIDELINES

Category	Cost	Source
Time value per hour	\$24.64	http://ostpxweb.dot.gov/policy/reports.htm
Sulphur dioxide per ton	\$16,000	http://ostpxweb.dot.gov/policy/reports.htm
Particulates per ton	\$168,000	http://ostpxweb.dot.gov/policy/reports.htm
Nitrogen oxide per ton	\$4,000	http://ostpxweb.dot.gov/policy/reports.htm
Carbon dioxide per metric ton	\$2.00	http://ostpxweb.dot.gov/policy/reports.htm
Oil savings per gallon	\$0.381	http://ostpxweb.dot.gov/policy/reports.htm
Moderate accident - MAIS2	\$157,958	U.S. Department of Transportation, <i>The Economic Impact of Motor Vehicle Crashes 2000</i> , p. 62
Average wages in Orem City	\$45,000	Utah Department of Workforce Services
Labor inflation rate	3.2%	ftp://ftp.bls.gov/pub/suppl/empsit.ceseeb2.txt Bureau of Labor Statistics; Private Employment Earnings

VEHICLE TRIPS SAVED

Year	Daily Hours Saved	TOTAL
2012	485.9	
2013	511.5	\$3,391,253.53
2014	537.1	\$3,675,294.30
2015	562.7	\$3,974,068.38
2016	588.3	\$4,288,228.70
2017	613.9	\$4,618,454.96
2018	639.6	\$4,965,454.59
2019	665.2	\$5,329,963.92
2020	690.8	\$5,712,749.23
2021	716.4	\$6,114,607.95
2022	742.0	\$6,536,369.88
2023	767.6	\$6,978,898.41
2024	793.2	\$7,443,091.84
2025	818.8	\$7,929,884.75
2026	844.5	\$8,440,249.38
2027	870.1	\$8,975,197.08
2028	895.7	\$9,535,779.84
2029	921.3	\$10,123,091.84
2030	946.9	\$10,738,271.08
2031	972.5	\$11,382,501.07
2032	998.1	\$12,057,012.56

	Total	NPV	2009	2010	2011	2012	1 2013	2 2014	3 2015	4 2016	5 2017	6 2018	7 2019	8 2020	9 2021	10 2022	11 2023	12 2024	13 2025	14 2026	15 2027	16 2028	17 2029	18 2030	19 2031	20 2032	
TRAVEL																											
Travel hours saved per weekday							511	537	563	588	614	640	665	691	716	742	768	793	819	844	870	896	921	947	973	998	
Travel hours saved per year	3,935,795	1,575,714	0	0	0	0	133,354	140,032	146,709	153,387	160,064	166,741	173,419	180,096	186,774	193,451	200,128	206,806	213,483	220,161	226,838	233,516	240,193	246,870	253,548	260,225	
Value of time saved	\$142,210,423	\$53,142,449	\$0	\$0	\$0	\$0	\$3,391,254	\$3,675,294	\$3,974,068	\$4,288,229	\$4,618,455	\$4,965,455	\$5,329,964	\$5,712,749	\$6,114,608	\$6,536,370	\$6,978,898	\$7,443,092	\$7,929,885	\$8,440,249	\$8,975,197	\$9,535,780	\$10,123,092	\$10,738,271	\$11,382,501	\$12,057,013	
ACCIDENT SAVINGS																											
Accident savings	\$31,317,786	\$12,962,634	\$0	\$0	\$0	\$0	\$1,288,937	\$1,314,716	\$1,341,010	\$1,367,831	\$1,395,187	\$1,423,091	\$1,451,553	\$1,480,584	\$1,510,195	\$1,540,399	\$1,571,207	\$1,602,631	\$1,634,684	\$1,667,378	\$1,700,725	\$1,734,740	\$1,769,435	\$1,804,823	\$1,840,920	\$1,877,738	
FUEL																											
Fuel consumption reduction	9,446	4,084	0	0	0	0	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3	472.3
Value of fuel reduction	\$3,599	\$1,556	\$0	\$0	\$0	\$0	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180	\$180
EMISSIONS																											
Sulphur dioxide	\$215	\$124	\$0	\$0	\$0	\$0	\$26	\$25	\$23	\$21	\$20	\$18	\$17	\$15	\$13	\$12	\$10	\$8	\$7	\$5	\$3	\$2	\$0	-\$2	-\$3	-\$5	
Particulates	\$1,464,465	\$583,073	\$0	\$0	\$0	\$0	\$47,994	\$50,649	\$53,305	\$55,961	\$58,617	\$61,272	\$63,928	\$66,584	\$69,240	\$71,895	\$74,551	\$77,207	\$79,863	\$82,518	\$85,174	\$87,830	\$90,486	\$93,141	\$95,797	\$98,453	
Nitrogen oxide	\$112,619	\$38,830	\$0	\$0	\$0	\$0	\$668	\$1,190	\$1,713	\$2,235	\$2,758	\$3,280	\$3,803	\$4,325	\$4,847	\$5,370	\$5,892	\$6,415	\$6,937	\$7,459	\$7,982	\$8,504	\$9,027	\$9,549	\$10,071	\$10,594	
Carbon dioxide	\$3,705	\$2,417	\$0	\$0	\$0	\$0	\$110	\$118	\$126	\$134	\$142	\$150	\$158	\$166	\$173	\$181	\$189	\$197	\$205	\$213	\$221	\$229	\$237	\$244	\$252	\$260	
CONSTRUCTION																											
Jobs created - short-term construction																											
Wages paid - short-term construction	\$47,940,000	\$42,401,562		\$11,603,659	\$33,176,659	\$3,159,682																					
Materials purchased				\$7,735,773	\$22,117,773	\$2,106,455																					
Indirect wage impacts from materials purchased	\$27,274,810	\$24,123,791		\$6,601,744	\$18,875,408	\$1,797,658																					
JOBS																											
Jobs created - long term - UVU - cumulative			0	0	0	0	0	0	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Wages paid - long term - UVU	\$44,336,123	\$16,388,892	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,190,331	\$2,234,576	\$2,280,241	\$2,327,370	\$2,376,012	\$2,426,213	\$2,478,025	\$2,531,499	\$2,586,689	\$2,643,648	\$2,702,435	\$2,763,108	\$2,825,727	\$2,890,354	\$2,957,055	\$3,025,896	\$3,096,944	
Jobs created - long term - business park - due to overpass							20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	
Wages paid - long term - business park	\$294,268,041	\$95,698,801	\$0	\$0	\$0	\$0	\$928,870	\$1,917,333	\$2,968,255	\$4,084,627	\$5,269,567	\$6,526,325	\$7,858,288	\$9,268,989	\$10,762,109	\$12,341,483	\$14,011,109	\$15,775,152	\$17,637,952	\$19,604,028	\$21,678,091	\$23,865,044	\$26,169,996	\$28,598,268	\$31,155,398	\$33,847,156	
LAND VALUES																											
Acres impacted							2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Land value impacts							\$419,411	\$432,864	\$446,750	\$461,081	\$475,871	\$491,136	\$506,891	\$523,151	\$539,932	\$557,252	\$575,128	\$593,577	\$612,617	\$632,269	\$652,551	\$673,483	\$695,087	\$717,384	\$740,396	\$764,147	
Ten-year delay for sales	\$4,854,339	\$1,390,195	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$419,411	\$432,864	\$446,750	\$461,081	\$475,871	\$491,136	\$506,891	\$523,151	\$539,932	\$557,252	
TOTAL	\$593,786,127	\$246,734,325		\$18,205,403	\$52,052,067	\$4,957,340	\$5,658,039	\$6,959,506	\$8,338,681	\$11,989,549	\$13,579,501	\$15,260,011	\$17,035,260	\$18,909,603	\$20,887,579	\$22,973,916	\$25,592,947	\$27,924,436	\$30,380,110	\$32,965,547	\$35,686,552	\$38,549,171	\$41,559,697	\$44,724,681	\$48,050,945	\$51,545,586	
Economic Rate of Return	24%																										
Benefit-Cost Ratio	7.4	3.1																									

EMPLOYMENT WAGE JUSTIFICATION	Total	Mining	Construction	Manufacturing	Trade, Transp. & Utilities		Information	Financial Activities	Professional & Business Svcs	Education & Health Svcs	Leisure & Hospitality	Other Services	Government
Orem (2007)													
Avg. No. of Firms	3,167	D	421	161	687	110	461	638	294	165	D	64	
Avg. Employment	49,528	D	3,885	4,669	10,193	2,524	2,326	8,913	6,458	3,800	D	5,665	
Total Wages (\$)	\$1,511,008,694	D	\$131,515,382	\$209,910,763	\$263,116,601	\$153,845,286	\$83,971,969	\$272,388,998	\$137,750,416	\$50,020,181	D	\$182,449,741	
Avg. Monthly Wage (\$)	\$2,542	D	\$2,821	\$3,746	\$2,151	\$5,079	\$3,009	\$2,547	\$1,777	\$1,097	D	\$2,684	

Source: Department of Workforce Services

Construction Jobs per Quarter

	1st Q	2nd Q	3rd Q	4th Q	TOTAL
2010	14	14	42	56	126
2011	73	98	131	58	361
2012	34	-	-	-	34
Total	122	113	173	114	521

Tons of Savings - No Build Less Build

Analysis Year	Sulfur Dioxide (SO2)	Diesel Particulate Matter (Diesel PM)	Particulate Matter < 2.5 microns (PM 2.5)	Particulate Matter < 10 microns (PM10)	Oxides of Nitrogen (NOx)	Carbon Dioxide (CO2)	Carbon Monoxide (CO)
2005	0.002476878	0.029702367	0.060595144	0.068914267	-0.877789847	25.55416704	-1.985161441
2006	0.002373815	0.034385574	0.065471079	0.075163183	-0.747188308	28.83336912	-1.318140674
2007	0.002270751	0.03906878	0.070347014	0.081412098	-0.616586769	32.11257119	-0.651119907
2008	0.002167687	0.043751986	0.075222948	0.087661014	-0.48598523	35.39177327	0.01590086
2009	0.002064623	0.048435193	0.080098883	0.093909929	-0.355383691	38.67097535	0.682921627
2010	0.001961559	0.053118399	0.084974818	0.100158845	-0.224782152	41.95017742	1.349942394
2011	0.001858495	0.057801605	0.089850753	0.10640776	-0.094180613	45.2293795	2.016963161
2012	0.001755431	0.062484812	0.094726687	0.112656676	0.036420926	48.50858158	2.683983928
2013	0.001652367	0.067168018	0.099602622	0.118905591	0.167022465	51.78778365	3.351004696
2014	0.001549303	0.071851224	0.104478557	0.125154507	0.297624004	55.06698573	4.018025463
2015	0.001446239	0.07653443	0.109354492	0.131403422	0.428225543	58.3461878	4.68504623
2016	0.001343175	0.081217637	0.114230426	0.137652338	0.558827082	61.62538988	5.352066997
2017	0.001240111	0.085900843	0.119106361	0.143901253	0.689428621	64.90459196	6.019087764
2018	0.001137047	0.090584049	0.123982296	0.150150169	0.82003016	68.18379403	6.686108531
2019	0.001033983	0.095267256	0.128858231	0.156399084	0.950631699	71.46299611	7.353129298
2020	0.000930919	0.099950462	0.133734165	0.162648	1.081233238	74.74219819	8.020150065
2021	0.000827855	0.104633668	0.1386101	0.168896915	1.211834778	78.02140026	8.687170832
2022	0.000724791	0.109316875	0.143486035	0.175145831	1.342436317	81.30060234	9.354191599
2023	0.000621727	0.114000081	0.148361969	0.181394746	1.473037856	84.57980442	10.02121237
2024	0.000518664	0.118683287	0.153237904	0.187643662	1.603639395	87.85900649	10.68823313
2025	0.0004156	0.123366494	0.158113839	0.193892577	1.734240934	91.13820857	11.3552539
2026	0.000312536	0.1280497	0.162989774	0.200141493	1.864842473	94.41741065	12.02227467
2027	0.000209472	0.132732906	0.167865708	0.206390408	1.995444012	97.69661272	12.68929543
2028	0.000106408	0.137416113	0.172741643	0.212639324	2.126045551	100.9758148	13.3563162
2029	3.34381E-06	0.142099319	0.177617578	0.218888239	2.25664709	104.2550169	14.02333697
2030	-9.97201E-05	0.146782525	0.182493513	0.225137155	2.387248629	107.534219	14.69035774
2031	-0.000202784	0.151465732	0.187369447	0.23138607	2.517850168	110.813421	15.3573785
2032	-0.000305848	0.156148938	0.192245382	0.237634986	2.648451707	114.0926231	16.02439927