



# Cost Benefit Analysis on the Construction of a 50-Meter Community Pool

Economic Development Department

City of Las Cruces

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## **Executive Summary**

The proposed new community pool is a 50-meters long with indoor swimming used for competitions with 8 lanes estimated. The construction of the 50-meter community pool is estimated at \$18,150,000 and with an annual operational cost of \$641,020. The pool will have annual revenues (tangible benefits) of \$126,042. The intangible benefits are divided in economic impact of swim meets and health benefits of the residents of Las Cruces. The expected annual economic impact is \$451,381 from out-of-county visitors that will be attending the swim meets in the new community pool. The estimated health benefits represented as savings for health expenses is estimated at an annual \$235,955.

Based on the CBA, there is not an instance in which the revenues of the new community pool exceed the operating costs of the pool. This implies that the recovery rate (based on revenues solely) will always be less than 100%. However, by adding the intangible benefits, it is possible for the benefits to exceed the costs. This is based on intangible benefits that will be experienced by the residents and businesses of Las Cruces.

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### **Introduction**

On July 2<sup>nd</sup>, 2018, the Council of the City of Las Cruces approved the sale of bonds to finance the enclosure of a 50-meter community swimming pool for competitions to be located in 1401 E. Hadley Ave. in the City of Las Cruces, NM. The Council directed City staff to pursue a business plan to provide a full-bodied analysis to ensure that the proposed facility is a sound investment by the City of Las Cruces. This Cost-Benefit Analysis (CBA) is a sub-set of such business plan. The CBA indicates the total net benefit or cost for the swimming pool construction and operation across time, while comparing the total costs to its total benefits. A comprehensive CBA incorporates tangible benefits like revenues, plus intangible benefits like health benefits and economic impact to the region.

The City of Las Cruces currently operates, 2 facilities with enclosed lap swimming. The first is the Regional Aquatic Center (RCA), which is a facility built in 2010 primarily dedicated for recreational activities, open swim, fitness and 2 lanes (25 meters) for lap swimming. The second facility is Frenger Pool, which was built in the 1950s, this pool is primarily dedicated for lap and open swimming. This facility has 6 lanes (25 meters) that serve the population of lap swimmers in Las Cruces. The average age of the 2 pools is 38 years. The RCA pool meets the population needs of recreation and fitness programs with its operations. However,

Frenger Pool cannot continue to increase its operations to attract more lap swimmers because of the decaying infrastructure associated to the time of construction.

In terms of health statistics associated to Doña Ana County, the County Health Rankings and Roadmaps<sup>1</sup> website indicates that about 20% of adults in Doña Ana County reported to have no physical activity in the past 30 days. The County Health Rankings and Roadmaps also indicates that in Doña Ana County about 26% of the adult population reported a BMI of 30 or more, which are considered to suffer adult obesity. The website also reports that about 80% of the population in the County live within half a mile of a park or within one mile of a recreational facility<sup>2</sup>. The construction of an indoor pool can help reduce the physical inactivity of citizens of Las Cruces.

The proposed new community pool is a 50-meter indoor swimming pool for competitions with an estimated 8 lanes. The temperature for pools with competitive characteristics like this one oscillates between 78° F to 82° F. The pool is expected to have all required functional areas like showers, dressing rooms, lifeguard rooms, equipment, etc. It is also expected to have all support areas like

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<sup>1</sup> <http://www.countyhealthrankings.org/app/new-mexico/2018/rankings/dona-ana/county/outcomes/overall/snapshot>

<sup>2</sup> <https://www.cdc.gov/500cities/>

lobby, spectator seating (possibly room for 700 spectators), restrooms, concessions, etc. The budgeted estimated cost for the construction of the indoor pool is \$18,150,000.

### **Scope of the Study**

- Find the reasonable assumptions of the Cost-Benefit model.
- Carry out the analysis of demand, pool capacity, and population trends for the population in the City of Las Cruces.
- Calculate intangible benefits: the economic impact of out-of-county visitors attending swim meets and the health benefits.
- Cost-Benefit Analysis (CBA) of the construction of the indoor pool.

### **Methodology**

The methodology will consist of performing a forecast on the demand for the indoor pool to estimate future revenues. This study is an *ex ante* study given that the facility has not been built yet. The analysis is based on the current population of swimmers of Las Cruces, while comparing it to the expected growth in swimmers for the City. The expected growth in swimmers is provided by the Department of Parks and Recreation of the City of Las Cruces. The data is collected from the visitor data on other swimming facilities currently in existence in Las Cruces collected by the same

Department of Parks and Recreation of the City of Las Cruces. The analysis will forecast demand for the pool uses based on the expected growth rates of population until 2030. This growth in swimming pool demand will be the basis for the CBA revenue.

After the expected demand is calculated the expected revenues will be calculated and compared to the costs. Information on operating costs will be calculated using the current operating costs for Frenger Pool and adapting the new pool costs to the new characteristics of the pool. The study will adapt the operating costs to expected growth in prices over time. Intangible benefits will also be calculated to provide a broader view on the benefits that the new pool provides. The CBA is a commonly utilized tool in assessing new projects. The information will provide a better basis for the decision-making process.

### **Assumptions**

Any *ex ante* Cost-Benefit Analysis needs to carry basic assumptions that will aid in exploring the future effects. The Department of Parks and Recreation reports visitor's data to Frenger Pool and RAC. However, no further information is provided in terms of demographics such as age, race, or ethnicity. Based on this, the current study will make 4 major assumptions of the analysis. Changes in these basic assumptions will result in changes to the

overall results of this study. There are more detailed assumptions that will be described in each individual portion as the paper progresses.

Initially this study will assume a specific age distribution of visitation based on anecdotal evidence from the Aquatic Center manager. Age is a key factor in the analysis of revenues, since discounted prices apply if the users are in ages 0-3 and 60 and over for certain programs. According to the Aquatic Center manager, the programs where there is a higher concentration of users with discount are: open swim, lap swim and fitness programs. This study assumes that 40% of the population in those programs are paying a discounted price.

The second assumption indicates that the proportion of visitors attending lap swimming, open swimming, and all other activities carried in Frenger and RAC will be the base population of swimmers expected to use the new pool. This number will be the base population, at which population growth and swimmer population growth rates will be applied. New swimmers and population growth help in the projection of how many individuals can be expected to attend the new pool. Table 1 illustrates the average annual attendance figures for RAC and Frenger Pool during their peak and non-peak periods.

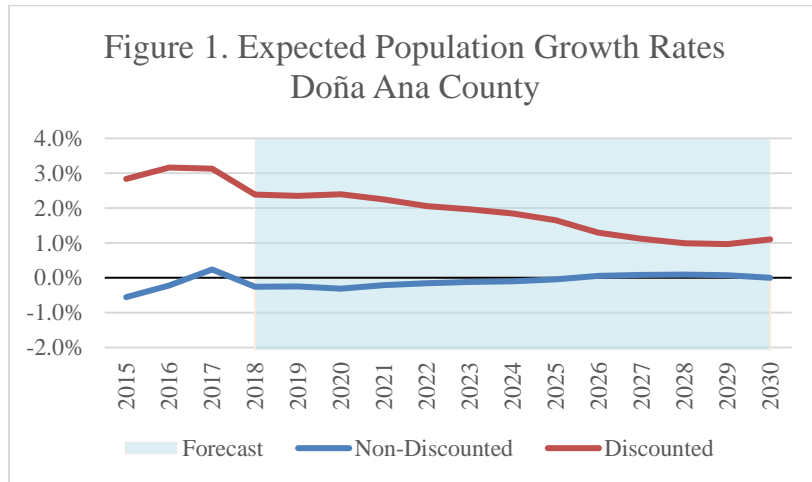
Enclosed Facility	Peak & Non-Peak (12 Months) (360 Days)	Peak Period (3.5 Months) (105 Days)	Non-Peak Period (8.5 Months) (255 Days)
Regional Aquatic Center	108,900 Annual	63,000 Annual	45,900 Annual
	303 Daily	600 Daily	180 Daily
	Built in 2010 this pool is primarily used for recreational activities, open swim, fitness, and to a lesser extent lap swimming.		
Frenger Pool	25,200 Annual	7,350 Annual	17,850 Annual
	70 Daily	70 Daily	70 Daily
	Built in the 1950's this pool is primarily used for lap swimming and open swimming.		

Source: Parks and Recreation Department, City of Las Cruces

The third assumption is that operating costs of the new 50-meter community pool will be based on the costs associated with Frenger Pool with specific changes in items that can be expected to differ due to its larger capacity and equipment. The Parks and Recreation Department indicate that Frenger Pool has an annual operational cost \$174,670, this study will assume a scenario one where Frenger Pool closes, and those funds can be used for the new 50-meter community pool.

The fourth assumption states that future revenues are based on the growth rate of population for different age cohorts: discount population (ages 0-3 and 60-over) and non-discount population (ages

4-59). The models are based on the forecasts provided by the economic modeling program Jobs EQ. Figure 1 is the expected population in Doña Ana County for discount and non-discount populations until 2030. The population forecasts of Jobs EQ are based on the national population equations based on birth and death rates, as well as considering net migration. These population forecasts are then adapted to measure the population characteristics for Doña Ana County. As it can be observed from the graph the population growth rates for the County, the population that is expected to get a discount in the programs for the new pool are expected to be growing, although at a decreasing rate, while the population receiving no discount are expected to grow slightly.



Source: Economic Development Department using Jobs EQ Data

## Programs

The Parks and Recreation Department of the City of Las Cruces estimates the following programs (Table 2) will be offered to serve the population of Las Cruces in the proposed new indoor 50- meter community pool:

Programs	Expected Annual Population Served
Swim Lessons*	282
<i>Kids*</i>	252
<i>Adults</i>	30
Water Safety	90
Aqua Zumba*	1,500
Open Swim*	10,000
Lap Swim*	8,750
Water Polo	112
<i>Youth</i>	56
<i>Adults</i>	56
Volleyball	72
Lifeguard Class	50
First Aid/CPR Classes	80
Aqua Spin*	630
Swim Teams	3750
Swim Meets	6,000
Special Events	300
Total Population	31,616
*At least 40% of the population in this program is ages 0-3 or 60 and over	

Source: Parks and Recreation Department, City of Las Cruces

### Tangible Benefits-Revenues

Future visitors of the new indoor 50-meter community pool are calculated by using the expected demand (visitors) of a program implementing the figures in Table 2 and applying the population growth rates as depicted in Figure 1. These growth rates are derived from Jobs EQ based on the population equation forecasts used by the U.S. Census and applying it to Doña Ana County.

Visitors with discount are expected to grow at a faster pace than non-discount visitors. This is driven by the growth in population ages 60 and above, which grows at an annual average rate of 1.6% exceeding the growth rate of the overall population at 0.7% annually. This high level of growth of discounted visitors is expected to affect lap swimming, open swim, and fitness programs substantially. However, even though the population that is receiving a discount is expected to grow, they are still a fraction of the overall population, which is expected to continue to grow. This implies that revenues are expected to continue to grow over time.

Revenues are calculated by multiplying the expected population using a program during a specific year by the fees associated with that specific program. The expected revenues are calculated using the fee schedule indicated in Table 3. The fee schedule does not

incorporate an increase in inflation, given that many of these fees have remained constant over-time.

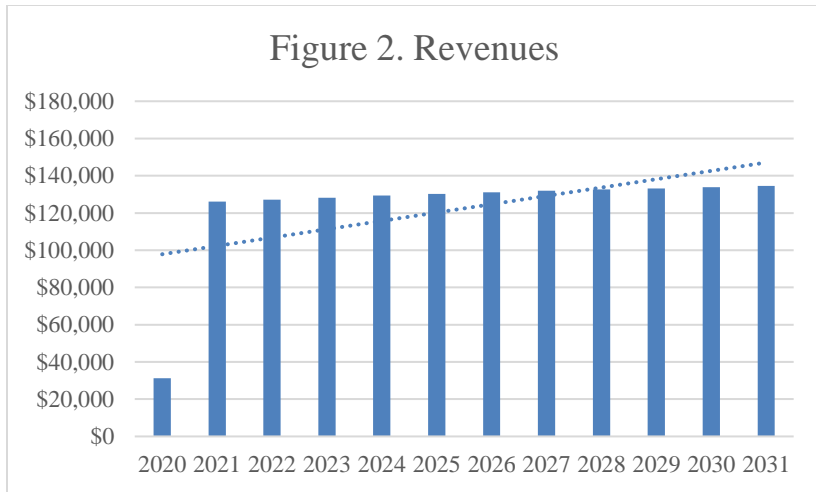
Table 3. Fee Schedule of Expected Programs	
Programs	Expected Fees
Swim Lessons	
Kids	\$45 per participant
Adults	\$60 per participant
Water Safety	\$15 per participant per class
Aqua Zumba*	\$3 Non-Discounted, \$1 Discounted per participant per class
Open Swim*	
Lap Swim*	
Aqua Spin*	
Water Polo	
Youth	\$150 Youth per team per season
Adults	\$200 Adult per team per season
Volleyball	\$200 per team per season
Lifeguard Class	\$200 per participant per class
First Aid/CPR Classes	\$75 per participant per class
Swim Teams	\$8 per lane per hour
Swim Meets	\$200 per team per hour
Special Events	\$1 per participant per event
*At least 40% of the population in this program is ages 0-3 and/or 60 or over	

Source: Parks and Recreation Department, City of Las Cruces

The revenues are expected to begin in October of 2020, which is the scheduled date for the opening of the new pool. Figure 2 indicates the revenues for the new pool based on the assumptions undertaken. By 2020, the revenues of the pool are estimated to be \$31,219 given

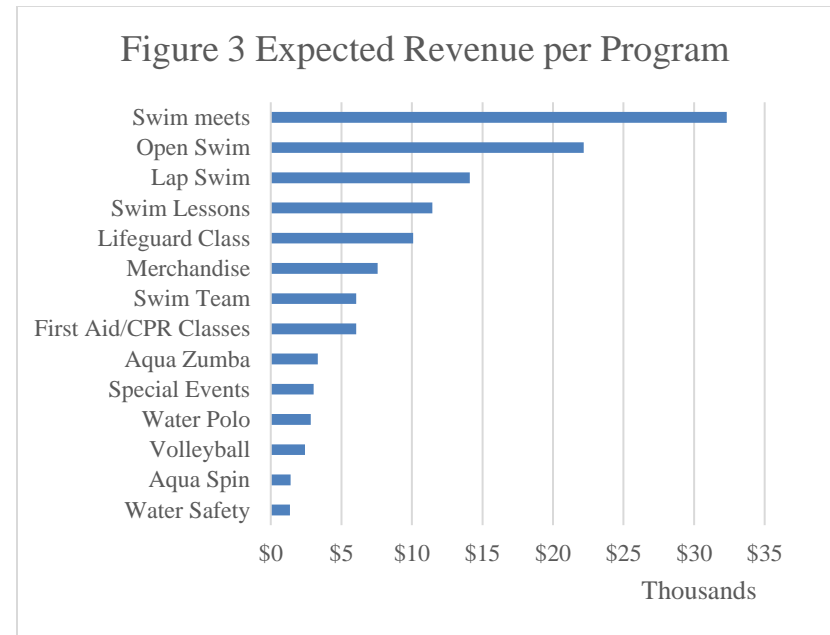


that the pool would be operating for only 3 months. However, by 2021 the expected revenue from the new indoor 50-meter community are calculated at \$126,042. By 2031 the revenues are expected to be \$134,611. The full projection of revenues is in Appendix A.



Source: Economic Development Department, City of Las Cruces

The breakdown of the expected revenue per program is indicated in Figure 3. The program that is expected to provide the largest source of revenue are the Swim Meets with a projected annual revenue of \$32,324, followed by open swim and lap swim with \$22,169 and \$14,109 respectively. The programs that are expected to bring the least amount of revenue are water safety classes and aqua spin classes.



Source: Economic Development Department, City of Las Cruces

Benefits are based on tangible and intangible benefits. Revenues are tangible benefits, since they are evident for the City. Intangible benefits are based on the economic impact of out-of-town visitors attracted by the swim competitions as well as the health benefits of having a population that is dedicated to swimming rather than continued physical inactivity.

### **Intangible Benefits-Economic Impact of Swim Meet Visitors**

The economic impact analysis is carried to measure the net change in new economic activity, primarily spending, income, and jobs, associated with an economic event (new spending) inside a geographical area. The argument is that an economic injection (new dollars) would presumably generate more than proportional effects of economic activity in a region. Three types of impacts are estimated from here: direct, indirect, and induced.

The direct expenditures cause spin-off effects that result in other expenditures at the Doña Ana County level<sup>3</sup>. For example, direct expenditures from out-of-county visitors generate purchases of hotel nights, restaurant meals, groceries, commodities, and other goods. The indirect effects come from ancillary industries that are part of the supply chain of the direct effect industries. Induced effects involve people and businesses (local) without obvious connection to the direct effects, such as the expenditure of a waiter's tips in his electric bill, where the tips were paid by an out-of-county visitor driven by the proclamation.

This analysis focuses on calculating a net economic impact of out-of-county visitor's due to the new swim meets expected to be carried at

the new 50-meter community pool. The expenditures of local visitors are not counted, since presumably these expenditures would have occurred somewhere else in the City. Therefore, they are not considered an injection to the local economy. Only the expenditures of out-of-county visitors driven by the swim meets can be counted toward the economic impact.

The Parks and Recreation Department estimates 10 annual swim meets with a total annual attendance of 10 teams per meet with 60 swimmers per team, a total of 6,000 swimmers annually. By making the assumption that half of the individuals participating in the competition are from out-of-county, this implies that about 3,000 swimmers will attend the meet from outside the county. However, these swimmers do not usually attend the meeting by themselves, since they are, in many instances, accompanied by parents, guardians, spouses, or family members. The current study assumes that each out-of-county swimmer equals 2.5 overall out-of-county visitors. This means that annually swim meets at the new pool will attract a total of 7,500 out-of-county visitors.

Based on the previous assumptions, we are able to estimate an approximation to the economic impact of the swim meet attendance of the new pool from out-of-county visitors. In order to approximate spending of the number of attendees that come from out-of-county,

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<sup>3</sup> Adkisson, R. V., McFerrin, R., & Center, A. (2006). Potential Economic Impacts of a PGA Champions Golf Tour Event in New Mexico. *Office of Policy Analysis, Arrowhead Center, New Mexico State University.*

the Economic Development Department utilizes the type of expenditure and spending per visitor baselined from the White Sands National Monument (WSNM) in Otero County, NM. WSNM is about 50 miles away from Doña Ana County and both counties share similar visitor demographics. Table 4 indicates the categories of expenditure and the percentage dedicated to that consumption as well as the average consumption per visitor in WSNM<sup>4</sup>.

Category	Percentage	1 Visitor	7,500 Visitors
Camping	0.60%	\$0.31	\$2,325
Gas	17.70%	\$9.16	\$68,700
Groceries	6.00%	\$3.11	\$23,325
Hotels	30.50%	\$15.79	\$118,425
Recreation Industries	5.20%	\$2.69	\$20,175
Restaurants	19.80%	\$10.25	\$76,875
Retail	16.10%	\$8.33	\$62,475
Transportation	4.10%	\$2.12	\$15,900
Totals	100%	\$51.77	\$388,275

Source: Author's calculations and data from the National Park Service

The total direct expenditures from out-of-county visitors attending the swim meets at the new pool generate \$388,275 annually inside Doña Ana County. It is important to point out that this number is besides their swim meet related expenditures. The different impacts are indicated in Table 5 and calculated using JobsEQ data and software. Table 5 indicates the local economic impact of the out-of-county visitors due to the swim meets carried at the new pool in the City of Las Cruces. The expected annual total sales/output generated by the swim meets was \$451,381. A total of 6 jobs is generated annually due to the expense of out-of-county visitors, paying an average salary of \$23,714.

	Direct	Indirect	Induced	Total
Employment	5	0	1	<b>6</b>
Sales/Output	\$388,200	\$59,152	\$4,029	<b>\$451,381</b>
Compensation	\$132,619	\$18,653	\$1,335	<b>\$152,608</b>

Source: Author's Calculations and Chmura's JobsEQ

<sup>4</sup> National Park Service. (2018, May 09). *Tourism to White Sands National Monument creates over \$35,000,000 in economic benefits report shows visitor spending supports 450 jobs in local economy* [News release]. Retrieved from <https://www.nps.gov/whsa/learn/news/2018econbenefit.htm>

### Intangible Benefits-Health Benefits

As it was established in the introduction, intangible benefits are based on the economic impact and the health benefits that can be expected from the activities and programs of the new 50-meter community pool. These intangible health benefits are identified in 2 main aspects: 1) the reduction of health risks and stress that come from physical activity at the new pool, and 2) the decreased possibility of drowning due to swim lessons. An important assumption that is made for the intangible health benefits section is that there is no substitution effect from other physical activity occurring at the new pool. In other words, individuals utilizing the new pool would not be doing any other physical activities had it not been because of the pool. Ideally a survey must be performed to know whether there is such a substitution effect present; however, due to time constraints we have assumed this idea to be out.

Carlson et al.<sup>5</sup> calculates that adults who practiced physical activity (more than 150 minutes/week), after accounting for different variables, save an average 29.9% more on health care expenses. This implies that practicing physical activity can help save up to a third on

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<sup>5</sup> Carlson, S. A., Fulton, J. E., Pratt, M., Yang, Z., & Adams, E. K. (2015). Inadequate physical activity and health care expenditures in the United States. *Progress in cardiovascular diseases*, 57(4), 315-323.

health care expenses on average. Carlson et al.<sup>5</sup> indicate that this translates to \$1,437 per person annually. Table 2 indicated the population that would benefit from the programs held at the new pool. However not all programs represent weekly physical activity, since some programs are carried only during the summer or during a specific class period like the CPR classes or the lifeguard class. Therefore, it is not expected that these individuals will carry recurrent physical activity at the new pool. Moreover, given that many of these programs are for 50 minutes, the population will be divided by 3, in order to get the number of people exercising weekly for 150 minutes or more. Table 6 indicates what programs are expected to have weekly physical activity and the population projected to serve.

	Weekly population Served	Population Exercising 150 minutes/week
Aqua Zumba*	30	10
Open Swim*	200	67
Lap Swim*	175	58
Aqua Spin*	13	4
Swim Teams	75	25
*At least 40% of the population in this program is ages 0-3 or 60 and over		

If we utilize the approximate savings that Carlson et al.<sup>5</sup> indicated in his study, we can approximate the savings that these individuals

produce in avoided health care costs. The annual intangible savings from avoided health care costs due to physical activity for a weekly population of 164 individuals at \$1,437 avoided in health care costs represents savings of \$235,955 annually.

The second intangible benefit comes from avoided health care expenses from drowning. According to the CDC unintentional drowning is the top 1, 2, 4, and 6 leading causes of unintentional injury deaths in 2016 for ages 1-4, 5-9, 10-14, and 15-24 respectively. Brenner et al<sup>6</sup> indicate that participating in swimming lessons reduces the risk of drowning by approximately 88%. The CDC<sup>7</sup> indicates that an average of 3,536 individuals die annually from drowning in the U.S. The CDC also reports that about 20% of those deaths are of individuals under the age of 14. This implies that swimming lessons should be considered a relevant intangible benefit. However, unintentional drowning in New Mexico from 2012 to 2016 was about 1.2 for every 100,000 population<sup>8</sup>. This implies that in a City like Las Cruces with about 101,459 inhabitants in 2016<sup>9</sup> there are approximately 1.2 drownings per year. The New Mexico

<sup>6</sup> Brenner, R. A., Taneja, G. S., Haynie, D. L., Trumble, A. C., Qian, C., Klinger, R. M., & Klebanoff, M. A. (2009). Association between swimming lessons and drowning in childhood: a case-control study. *Archives of Pediatrics & Adolescent Medicine*, 163(3), 203-210.

<sup>7</sup> <https://www.cdc.gov/homeandrecreationalafety/water-safety/waterinjuries-factsheet.html>

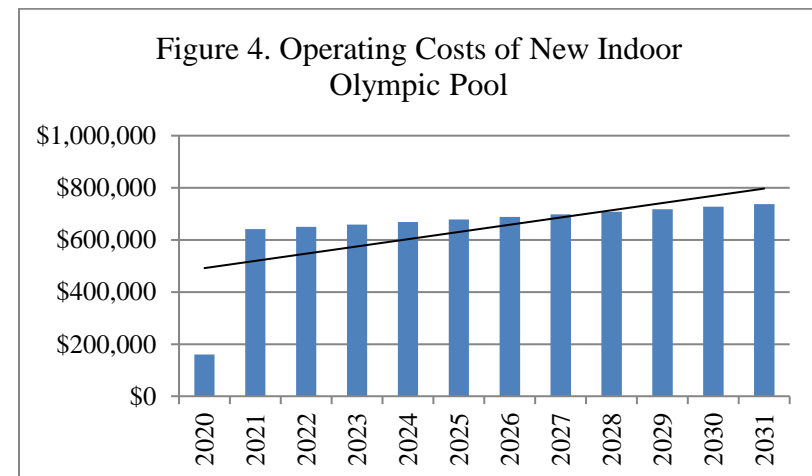
<sup>8</sup> <https://ibis.health.state.nm.us/indicator/view/InjuryUnintenDeath.InjCause.html>

<sup>9</sup> [Census.gov](https://www.census.gov)

Department of Health reports that from 2015 to 2017 only 1 infant mortality was caused by an unintentional and accidental injury<sup>10</sup> in Doña Ana County. This implies that although for the nation, prevention in drowning may seem like as a relevant measure for intangible benefits, it is not the case for New Mexico nor for Doña Ana County.

### Operating Costs

The operating cost for the new indoor 50-meter community pool is calculated at \$641,020 for 2021. Figure 4 forecasts the expected operating costs for the new pool until 2031. The operating costs of 2020 begin in October, which implies a fourth of the overall costs, therefore a smaller number.



Source: Economic Development Department, City of Las Cruces

<sup>10</sup> <https://ibis.health.state.nm.us/query/result/infmort/InfMort/InfMortCount.html>

The operating costs for the new pool were calculated using Frenger pool as the benchmark. The annual operating costs of Frenger Pool as reported by the Parks and Recreation Department are \$174,670. The operating costs of Frenger are primarily broken down into three portions: Utilities at \$24,400; Operations at \$43,250; and personnel at \$107,020. The operational cost of Frenger pool is based on a 1950's equipment of a 25-meter pool with 6 lanes that is open for 2,860 annual labor hours. Based on Frenger pool information we can calculate the new operational costs for the indoor pool. The new indoor community pool is 50-meters long with 8 lanes and 3,224 annual labor hours.

There were 4 main steps followed in order to calculate the new operating costs of the 50-meter community pool. First was to adjust the costs associated with efficiencies of new equipment that Frenger pool does not have, this is to attend the costs that grow in a disproportionate manner, this includes HVAC costs (not previously included in Frenger). Second, is to calculate the volume of the new pool compared with the volume of Frenger pool and adjust the costs that increase in a linear manner due to a greater volume. Third adjusts the 2,860 labor hours of Frenger and adapts for the labor hours that the new pool is expected to have: 3,224. Finally, operating costs over time are expected to increase based on the CPI for

operation costs and personnel; while utilities increase at the price index for electricity.

Not all costs can be increased in a linear manner, given that there are certain costs expected to have different efficiencies of new equipment. For example, utilities like electricity and water of the new pool are expected to have 30% savings due to energy and pipeline efficiencies associated with new equipment. The same rate of savings applies to facilities maintenance, which is part of operations cost. These items, even though they are experiencing savings are expected to have larger costs than Frenger given that the new pool is larger. Another non-linear increase in costs is on personnel costs, even if the new 50-meter community pool is larger than Frenger, the costs associated to personnel are not expected to increase by the same proportion. The current study assumes that personnel costs increase by 100% at the new pool.

After accounting for the efficiencies of new equipment, the costs are adjusted on the relative volumes of both pools. The new pool is expected to be 50 meters long with 8 swimming lanes, whereas Frenger pool is 25 meters with 6 lanes<sup>11</sup> (depths are assumed equal in both pools). The volume of the new pool is 167% larger than the

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<sup>11</sup> At the moment of writing this study there is still not clarity of the depth of the new pool, therefore the depth of Frenger pool will be assumed at the new pool.

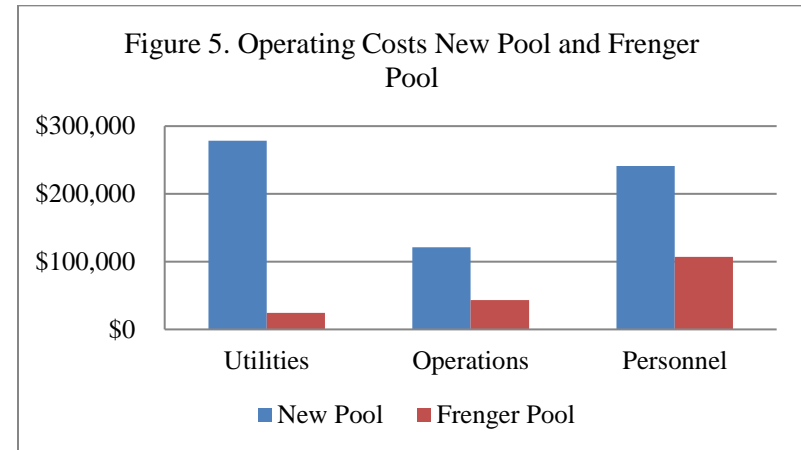
volume of Frenger pool. Costs that are linear in terms of the new pool were increased by 167% including utilities and operations. For example, if Frenger pool was using \$15,000 annually in chemicals for a pool that is 25 meters by 6 lanes for 2,860 labor hours, then given that the new pool is 167% larger than Frenger, the expected chemical costs of the new pool are \$40,050 annually for the same labor hours. These adjustments are expected to occur for all costs that grow lineally.

The third step is to adapt the costs of Frenger pool and its labor hours (2,860) to the new indoor 50-meter community pool to its labor hours (3,224). Each pool has public and labor hours. However in the calculation of operating costs labor hours are utilized. Table 7 indicates the expected annual labor hours that each pool is expected to have. Given that the costs of the new pool were benchmarked from Frenger pool, it was necessary to calculate the costs per labor hour in order to adapt them to the new number of labor hours. The costs per labor hour from Frenger pool are \$61.07 per hour. The costs per labor hour at the new pool are \$131.30.

Table 7 Scheduled Hours of Operation		
Weekly Hours	Frenger Pool	New Pool
Total Labor Hrs	55	62
Annual Hours	Frenger Pool	New Pool
Total Labor Hrs	2,860	3,224

Source: Parks and Recreation Department, City of Las Cruces

The final step is to increase operating costs at different price indices. Operation costs and personnel assume an annual 1.45% increase based on *All-Items in U.S. city average, all urban consumers, not seasonally adjusted*. The costs of utilities assume an annual 1.37% increase based on *Electricity in U.S. city average, all urban consumers, not seasonally adjusted*. Both price indices are calculated from the Bureau of Labor Statistics<sup>12</sup>. A full description of the operating costs can be found in the Appendix.



Source: Economic Development Department, City of Las Cruces

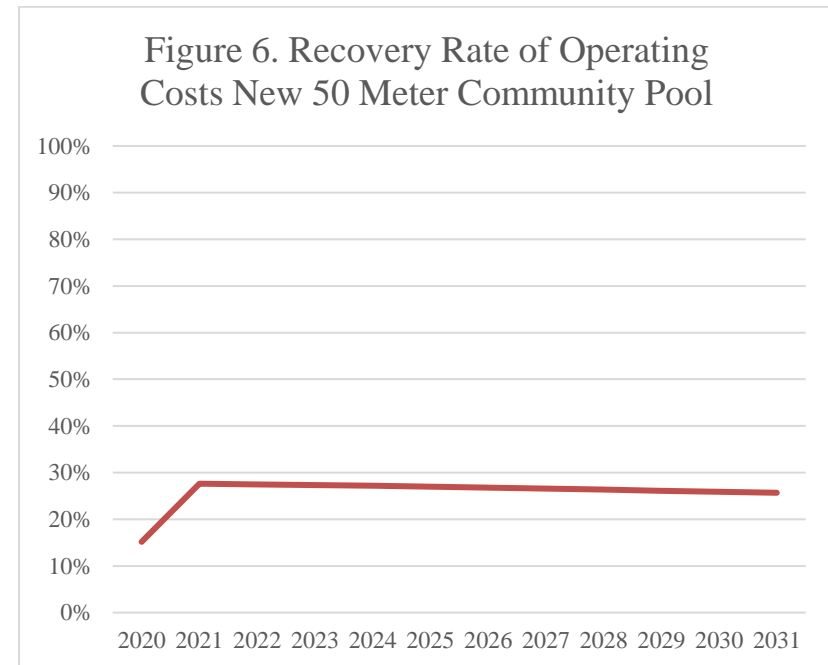
<sup>12</sup> [Bls.gov](http://Bls.gov)

### Cost-Benefit Analysis

The CBA will initially consider alternatives based on revenues (tangible benefits) and then incorporating the intangible benefits like the economic impact and health benefits, all in monetary values. The costs will reflect a scenario where Frenger pool is closed and those funds are used to cover some of the operating costs of the new 50-meter community pool. Given that the construction of the pool has not occurred yet (although the decision on construction has already been taken), providing projections of outcomes helps in the decision-making process. The full explanation of the CBA can be found in the Appendix.

If Frenger pool closes, then presumably those funds that were previously financing Frenger pool can now be used to cover part of the operating costs of the new 50-meter community pool. The recovery rate in this case is estimated to be an average of 25% annually. Figure 6 illustrates the recovery rate of operating costs. As time passes by, the expected revenues grow at a slower rate than the operating costs, and therefore the recovery rate is smaller into the future. There are two primary reasons to expect the recovery rate to continue to decrease: first, the fees charged to pool users are not projected to increase, while the costs of operation are increasing. Secondly, the population expected to receive a discount for the pool, grows at a faster pace, than overall population, this implies that

individuals receiving a discount will continue to grow, while paying a discounted price.

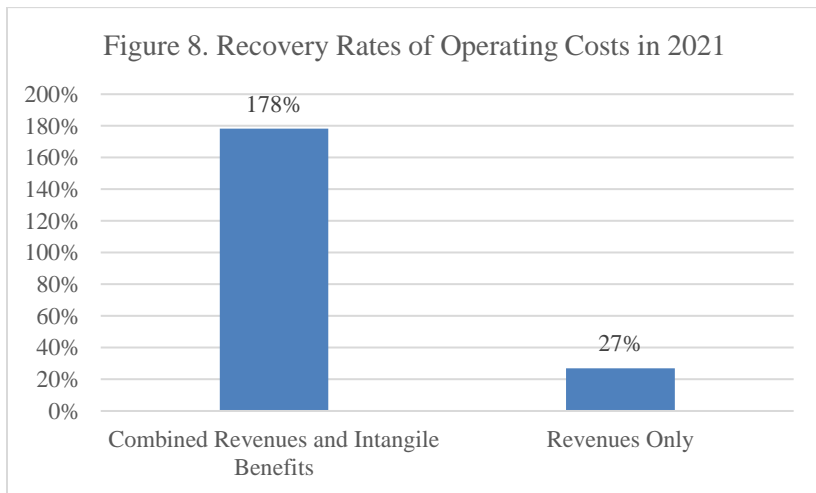


Source: Economic Development Department, City of Las Cruces

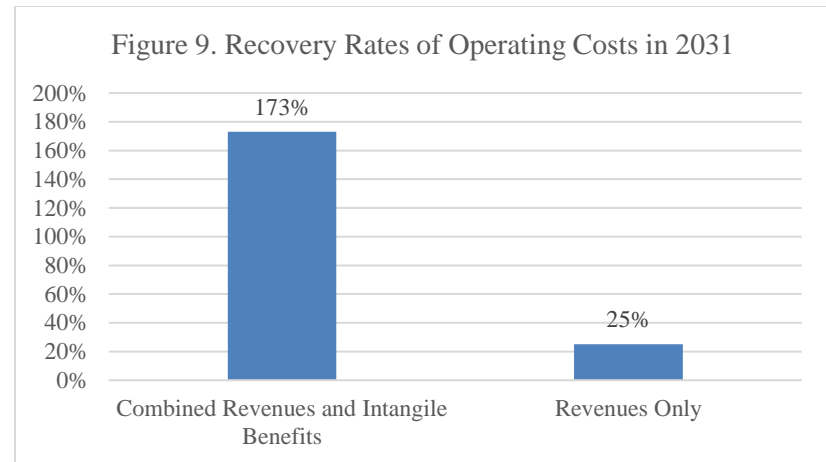
As it can be observed from Figure 6 there is no instance where the revenues of the pool exceed the operating costs. Besides this, over time the revenues are expected to grow at a smaller rate than the growth in operating expenses. This means that in the future the revenues will be capable of covering less and less of the operating expenses. However, financing the 50-meter community pool can be



viewed from the perspective of a public good. Essentially, the City will subsidize the costs of the pool in hopes of encouraging the physical activity and improving the health of the residents of Las Cruces like most of other Parks and Recreation activities. As a public good, it is important to incorporate the intangible benefits of the pool and measure, whether the benefits exceed the costs. Figure 8 indicates the recovery rates of operating costs in 2021 at the beginning of pool operations and Figure 9 indicates the recovery rates of operating costs in 2031, a decade later. Both figures contain scenarios based on revenues only and intangible benefits and revenues.



Source: Economic Development Department, City of Las Cruces



Source: Economic Development Department, City of Las Cruces

Figure 8 indicates that the recovery rate of operating costs based solely on revenues of 2021 is about 27%. However, if we count the intangible benefits (economic impact of swim meets and the health benefits to the residents of Las Cruces), then the recovery rate is approximately 178%. Figure 9 indicates the recovery rates of 2031 (once decreased recovery rates are experienced), it shows that revenues will cover approximately 25% of the operating costs. Nevertheless, if we add the economic impact of swim meets and the health benefits, it is obvious that recovery rates are well above the operating costs. It is important to point out that these benefits are not evident in terms of dollars to the pool, but are reflected in the savings of healthy individuals, as well as in businesses that received customers due to the swim meets.

### **Conclusion**

The proposed new community pool is a 50-meters long with indoor swimming used for competitions with 8 lanes estimated. The construction of the 50-meter community pool is estimated at \$18,150,000 and with an annual operational cost of \$641,020. The pool will have annual revenues (tangible benefits) of \$126,042. The intangible benefits are divided in economic impact of swim meets and health benefits of the residents of Las Cruces. The expected annual economic impact is \$451,381 from out-of-county visitors that will be attending the swim meets in the new community pool. The estimated health benefits represented as savings for health expenses is estimated at an annual \$235,955.

Based on the CBA, there is not an instance in which the revenues of the new community pool exceed the operating costs of the pool. This implies that the recovery rate (based on revenues solely) will always be less than 100%. However, by adding the intangible benefits, it is possible for the benefits to exceed the costs. This is based on intangible benefits that will be experienced by the residents and businesses of Las Cruces.

**Appendix**

Programs	Revenues														
	Totals	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
<b>SWIM LESSONS</b>	\$11,340			\$11,340	\$11,455	\$11,564	\$11,670	\$11,772	\$11,866	\$11,946	\$12,018	\$12,082	\$12,145	\$12,212	\$12,278
<i>Adult</i>	\$1,800			\$1,800	\$1,818	\$1,836	\$1,852	\$1,869	\$1,884	\$1,896	\$1,908	\$1,918	\$1,928	\$1,938	\$1,949
<b>WATER SAFETY</b>	\$1,350			\$1,350	\$1,363.69	\$1,377	\$1,389	\$1,401	\$1,413	\$1,422	\$1,431	\$1,438	\$1,446	\$1,454	\$1,462
<b>AQUA ZUMBA</b>	\$3,300			\$3,300	\$3,325	\$3,350	\$3,375	\$3,399	\$3,421	\$3,441	\$3,459	\$3,476	\$3,492	\$3,508	\$3,525
<i>Discounted</i>	\$1,320			\$1,320	\$1,350	\$1,377	\$1,404	\$1,430	\$1,454	\$1,473	\$1,489	\$1,504	\$1,518	\$1,535	\$1,551
<i>Non-Discounted</i>	\$1,980			\$1,980	\$1,976	\$1,973	\$1,970	\$1,968	\$1,967	\$1,968	\$1,970	\$1,972	\$1,973	\$1,973	\$1,974
<b>OPEN SWIM</b>	\$22,000			\$22,000	\$22,169	\$22,333	\$22,497	\$22,657	\$22,808	\$22,940	\$23,060	\$23,171	\$23,277	\$23,389	\$23,500
<i>Discounted</i>	\$8,800			\$8,800	\$8,998	\$9,182	\$9,363	\$9,535	\$9,693	\$9,818	\$9,928	\$10,026	\$10,122	\$10,234	\$10,340
<i>Non-Discounted</i>	\$13,200			\$13,200	\$13,171	\$13,151	\$13,135	\$13,121	\$13,115	\$13,122	\$13,133	\$13,145	\$13,155	\$13,155	\$13,159
<b>LAP SWIM</b>	\$19,250			\$14,000	\$14,108	\$14,212	\$14,317	\$14,418	\$14,514	\$14,598	\$14,675	\$14,745	\$14,813	\$14,884	\$14,954
<i>Discounted</i>	\$7,700			\$5,600	\$5,725.69	\$5,843	\$5,958	\$6,068	\$6,168	\$6,248	\$6,318	\$6,380	\$6,442	\$6,513	\$6,580
<i>Non-Discounted</i>	\$11,550			\$8,400	\$8,382	\$8,369	\$8,358	\$8,350	\$8,346	\$8,350	\$8,357	\$8,365	\$8,371	\$8,371	\$8,374
<b>WATER POLO - ADULT/YOUTH</b>	\$2,800			\$2,800	\$2,828	\$2,855	\$2,882	\$2,907	\$2,930	\$2,950	\$2,967	\$2,983	\$2,999	\$3,015	\$3,032
<b>VOLLEYBALL - ADULT</b>	\$2,400			\$2,400	\$2,424	\$2,447	\$2,470	\$2,491	\$2,511	\$2,528	\$2,543	\$2,557	\$2,570	\$2,585	\$2,598
<i>Lifeguard Class</i>	\$10,000			\$10,000	\$10,101	\$10,197	\$10,291	\$10,381	\$10,464	\$10,534	\$10,597	\$10,655	\$10,710	\$10,769	\$10,827
<i>First Aid/CPR Classes</i>	\$6,000			\$6,000	\$6,061	\$6,118	\$6,175	\$6,228	\$6,278	\$6,321	\$6,358	\$6,393	\$6,426	\$6,462	\$6,496
<b>AQUA SPIN</b>	\$1,386			\$1,386	\$1,397	\$1,407	\$1,417	\$1,427	\$1,437	\$1,445	\$1,453	\$1,460	\$1,466	\$1,473	\$1,480
<i>Discounted</i>	\$554			\$554	\$567	\$578	\$590	\$601	\$611	\$619	\$625	\$632	\$638	\$645	\$651
<i>Non-Discounted</i>	\$832			\$832	\$830	\$829	\$827	\$827	\$826	\$827	\$827	\$828	\$829	\$829	\$829
<b>RENTALS -</b>															
<i>Swim Team</i>	\$6,000			\$6,000	\$6,061	\$6,118	\$6,175	\$6,228	\$6,278	\$6,321	\$6,358	\$6,393	\$6,426	\$6,462	\$6,496
<i>Swim meets</i>	\$32,000			\$32,000	\$32,324	\$32,631	\$32,932	\$33,219	\$33,485	\$33,710	\$33,912	\$34,095	\$34,272	\$34,461	\$34,646
<b>SPECIAL EVENTS -</b>	\$3,000			\$3,000	\$3,030	\$3,059	\$3,087	\$3,114	\$3,139	\$3,160	\$3,179	\$3,196	\$3,213	\$3,231	\$3,248
<i>Merchandise</i>	\$7,500			\$7,500	\$7,576	\$7,648	\$7,718	\$7,786	\$7,848	\$7,901	\$7,948	\$7,991	\$8,033	\$8,077	\$8,120
<b>Totals</b>				\$31,219	\$126,042	\$127,153	\$128,247	\$129,297	\$130,275	\$131,112	\$131,867	\$132,553	\$133,216	\$133,920	\$134,611

Proposed New Community Pool Operating Costs					
UTILITIES		OPERATIONS		PERSONNEL	
Electric	\$21,867	Chemicals	\$40,050	Head Lifeguard	\$54,182
Gas	\$28,035	General Maint. Repair	\$26,700	Lifeguard	\$134,668
Water	\$4,112	Supplies	\$8,010	CPO	\$25,190
HVAC+Capital Maintenance	\$193,125	Improvements	\$6,675		
		Janitorial	\$4,005		
		Inspections	\$3,338		
		Facilities Maint	\$18,690		
Annual Total	\$247,140		\$107,468		\$214,040
Costs calculated for 2,860 labor Hours					
Total Annual Operating Cost=		\$568,647	TAC per Labor Hour=	\$199	
Costs calculated for 3,224 labor Hours					
UTILITIES	\$278,594	OPERATIONS	\$121,145	PERSONNEL	\$241,281
<b>Total Annual Operating cost for 3,224 labor hours</b>					
<b>\$641,020</b>			TAC per Labor Hour=	\$199	

Cost Benefit Analysis of New Pool																
Line	Variable	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
A	Revenues				\$31,219	\$126,042	\$127,153	\$128,247	\$129,297	\$130,275	\$131,112	\$131,867	\$132,553	\$133,216	\$133,920	\$134,611
B	Intangible Benefits (Economic Impact)				\$112,845	\$451,381	\$457,926	\$464,566	\$471,302	\$478,136	\$485,069	\$492,102	\$499,238	\$506,477	\$513,821	\$521,271
C	Intangible Benefits (Health Benefits)				\$58,989	\$235,955	\$238,034	\$240,083	\$242,048	\$243,880	\$245,446	\$246,860	\$248,143	\$249,384	\$250,704	\$251,997
D=A+B+C	Benefits				\$203,053	\$813,378	\$823,113	\$832,896	\$842,646	\$852,291	\$861,626	\$870,829	\$879,934	\$889,077	\$898,445	\$907,879
E	Operating Costs				\$160,255	\$641,020	\$650,092	\$659,292	\$668,623	\$678,086	\$687,683	\$697,416	\$707,286	\$717,297	\$727,449	\$737,745
F	9-Year ADS		\$679,957	\$1,246,980	\$1,254,889	\$1,245,557	\$1,249,629	\$1,251,771	\$1,251,805	\$1,249,777	\$1,250,622					
G	12-Year ADS	\$1,161,500	\$1,630,479	\$1,723,063	\$673,473	\$649,247	\$625,021	\$600,796	\$576,570	\$552,345	\$528,119	\$513,584	\$499,048			
H=F+G	Total Annual Debt Service	\$1,161,500	\$2,310,437	\$2,970,042	\$1,928,361	\$1,894,804	\$1,874,650	\$1,852,567	\$1,828,375	\$1,802,122	\$1,778,741	\$513,584	\$499,048			
I=E+H	Total Costs (Maintaining Frenger)	\$1,161,500	\$2,310,437	\$2,970,042	\$2,088,616	\$2,535,824	\$2,524,742	\$2,511,859	\$2,496,998	\$2,480,208	\$2,466,424	\$1,210,999	\$1,206,335	\$717,297	\$727,449	\$737,745
J	Frenger Operating Costs	\$174,670	\$177,168	\$179,701	\$182,271	\$184,877	\$187,521	\$190,203	\$192,923	\$195,681	\$198,480	\$201,318	\$204,197	\$207,117	\$210,079	\$213,083
K=E-J	Operating Costs (Without Frenger)				\$114,687	\$456,143	\$462,571	\$469,090	\$475,700	\$482,405	\$489,203	\$496,098	\$503,090	\$510,180	\$517,371	\$524,663
L=I-J	Total Costs (Without Frenger)				\$587,737	\$2,350,946	\$2,337,221	\$2,321,656	\$2,304,076	\$2,284,526	\$2,267,944	\$1,009,681	\$1,002,138	\$510,180	\$517,371	\$524,663
M=A/K	Recovery Rate of Operating Costs				0.152	0.276	0.275	0.273	0.272	0.270	0.268	0.266	0.263	0.261	0.259	0.257
N=A/L	Recovery Rate of Total Costs				0.015	0.054	0.054	0.055	0.056	0.057	0.058	0.131	0.132	0.261	0.259	0.257
O=A-L	Net Income				-\$556,518	-\$2,224,904	-\$2,210,068	-\$2,193,409	-\$2,174,779	-\$2,154,251	-\$2,136,832	-\$877,814	-\$869,585	-\$376,964	-\$383,450	-\$390,051
P=D/K	Recovery Rate of Operating Costs from Tangible and Intangible Benefits				1.770	1.783	1.779	1.776	1.771	1.767	1.761	1.755	1.749	1.743	1.737	1.730
Q=D/L	Recovery Rate of Total Costs from Tangible and Intangible Benefits				0.345	0.346	0.352	0.359	0.366	0.373	0.380	0.862	0.878	1.743	1.737	1.730