Impact Fee
Capital Improvements Plan
for
Major Roads, Drainage and Public Safety

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EXECUTIVE SUMMARY

This study documents the calculation of proposed impact fees for the City of Las Cruces major roads, stormwater drainage and public safety (fire and police) facilities. The proposed public safety fees would apply to all new development in the city, while the major roads and drainage fees would apply only to new development located in the "growth area" (i.e., outside the City's designated infill area). The major roads fee addresses the cost of City arterial roadways, and does not include right-of-way costs. The proposed drainage fee covers only the cost of arterial street arroyo crossings, and these costs, as with the roads fee, are allocated to new development on the basis of traffic generation. The drainage fee could be adopted as a separate fee, or combined with the major roads fee.

Las Cruces has experienced steady growth in recent years. Despite the slowed economy, this trend is expected to continue, driven as it is by many factors, including increased demand from baby boomers seeking desirable retirement living. Growth requires added capital facility capacity to meet demand from new development and to preserve the service standard now provided to existing development. Impact fees provide a way to meet this demand.

An impact fee is a one-time charge to new development used to fund the expansion of capital facilities. Impact fee assessment is a direct and equitable way to fund new capacity, because the amount of the fee is proportionate to the cost of service. Impact fees can be used only to pay the cost of projects and parts of projects needed to meet demand from new development. Impact fees cannot be used to pay operating expenses, deficiency correction, service upgrade, or any other cost attributable to existing development. The amount of the fee is set at a rate adequate to preserve the current service standard and to provide service to new development at the same rate – new development is not charged for a higher and more expensive level of service.

Impact fee assessment in New Mexico is governed by an impact fee enabling act – the *Development Fees Act*.[1] The *Act* provides local government the authority to impose fees and controls the amount, timing, method of assessment and use of the funds. This analysis is organized to address the requirements of the *Development Fees Act*, and in so doing, define an equitable and proportionate assessment that will help fund the requisite facilities, without undue burden on new or existing development.

Road Impact Fee Issues

While the proposed public safety impact fees would be new fees on development, the proposed major roads and drainage impact fees would essentially replace the existing system of developer exactions for roads. Most major road capacity expansion projects in the city to-date have been exacted, donated or built/funded by new development. The developer-driven approach has provided a patchwork of improved and unimproved roads, as a consequence of private sector decisions that guide the location and timing of development projects. The City has often not had sufficient control to implement its objective of a continuous, uniform and integrated road system. The developer-driven approach is inequitable to the private sector in that subdivisions or developments with extensive major road frontage may be required to provide lengthy and expensive

[1] The New Mexico Development Fees Act, Chapter 5, Article 8, NMSA

road improvements, whereas similar projects with limited or no frontage may provide no road improvements.

Once road impact fees are adopted, developers who make frontage improvements to major roads will either be reimbursed with impact fees paid by builders or have the impact fees within their subdivision reduced or eliminated. These reimbursements or impact fee credits should be calculated at 100% of the actual cost of the improvements. For this reason, major road impact fees should not be adopted at a small percentage of the maximum amount, because this will result in a situation where the funds collected will be insufficient to reimburse developers for the cost of their improvements.

Summary of Maximum Fees

This following schedule shows the maximum potential impact fees for major roads, stormwater drainage and public safety facilities. The major roads fee does not include the cost of rights-of-way. Arroyo crossings are included in the drainage fee. The Council may adopt fees at a lower rate depending on its assessment of impact fees in the context of other City priorities. Each of the three impact fees in Table 1 can be separately adopted, if so desired.

Table 1. Maximum Impact Fee Schedule

Land Use	Unit	Major Roads	Storm-Water	Public Safety	Total
Single-Family (Flat Rate Option)	Dwelling	$1,056	$438	$639	$2,133
Single-Family (Variable Rate Option)					
< 1,500 sf	Dwelling	$972	$403	$588	$1,963
1,500-2,499 sf	Dwelling	$1,056	$438	$639	$2,133
2,500 + sf	Dwelling	$1,162	$482	$709	$2,353
Multi-Family	Dwelling	$655	$272	$466	$1,393
Hotel/Motel	Room	$634	$263	$313	$1,210
Commercial/Retail	1000 sq. ft.	$1,542	$639	$735	$2,916
Office	1000 sq. ft.	$972	$403	$364	$1,739
Institutional	1000 sq. ft.	$665	$276	$204	$1,145
Industrial	1000 sq. ft.	$739	$307	$185	$1,231
Warehouse	1000 sq. ft.	$380	$158	$83	$621
Mini-Warehouse	1000 sq. ft.	$264	$110	$26	$400

Source: Major road fees from Table 24; stormwater drainage fees from Table 30; public safety fees from Table 45; the single-family category includes detached single-family and mobile homes, multi-family includes attached single-family, townhouse, apartments, and condominiums.

Single-family impact fees are presented in Table 1 in two forms: 1) as a flat rate fee, and 2) as a variable-rate fee that is assessed based on square footage. The impact fee program can be enacted based on either of the two approaches. The variable-rate option may offer the advantage of encouraging housing affordability, because smaller units are assessed a lower impact fee.

The potential Las Cruces impact fees compare favorably to state and national average impact fees, as shown in Table 2. The State average includes the park impact fee, since that is the other non-utility impact fee category allowed under New Mexico's impact fee act. State and national average total fees may be less than the sum of the individual average fees, since not all jurisdictions charge all possible fees (if a community does not charge a particular fee, it is not included in the average fee calculation). The national average fees exclude California, which has exceptionally high fees, and the

total includes other types of fees not authorized in New Mexico. All of the averages exclude water and wastewater fees.

Table 2. Comparative Non-Utility Single-Family Impact Fees

	Major Roads	Storm-Water	Public Safety	Parks	Total
Maximum Potential City of Las Cruces Fees	$1,056	$438	$639	$800	$2,933
National Average Fees (2009)	$2,586	$1,156	$727	$1,783	$6,110
New Mexico Average Fees (2009)	$2,932	$3,030	$708	$1,747	$3,221

Source: Las Cruces single-family impact fees from Table 1 (park fee is from City of Las Cruces); national (excluding California) and New Mexico average non-utility fees are from Duncan Associates, *National Impact Fee Survey*: 2009, December 2009 from impactfees.com.

Potential annual impact fee revenue over the next ten years based on the land use assumptions is shown below. This estimate of maximum revenue assumes that impact fees are assessed at the proposed rate, that growth occurs as projected, and that there are no impact fee exemptions or deferments.[2]

Table 3. Potential Annual Impact Fee Revenue, 2010 to 2020

Major Roads	$1,205,952
Stormwater Drainage	$501,335
Public Safety	$765,330
Total Annual Average Fee Revenue	$1,707,287

Source: Roads from Table 25; stormwater drainage from Table 31; public safety from Table 46.

Las Cruces does not now assess any of the impact fees that are the subject of this report. To date, the facilities have been obtained primarily by means of development agreement, exaction or City funding. In order to provide a smooth transition to the new system, the City may elect to implement a "phase-in" plan. A phase-in plan could be developed as part of the implementation of the impact fees to gradually phase-in the fees in over two years. A phase-in plan would result in a reduction of potential impact fee income during the phase-in period and would generate somewhat lower revenue than indicated in Table 3.

[2] Also assuming a flat-rate assessment for single-family detached units.

INTRODUCTION

This introductory chapter contains general information applicable to all of the impact fees addressed in this report. Topics include the legal framework for impact fees, types of eligible facilities, land use assumptions, service areas and fee calculation methodology.

Legal Context – The New Mexico Development Fees Act

Impact fees in New Mexico are governed by Article 8, Chapter 5 of New Mexico Statutes Annotated (NMSA) – the *Development Fees Act*. The *Act* imposes certain requirements for impact fee assessment in New Mexico, including:

- Capital facility types that are eligible for impact fee assessment;
- Categories of allowed and prohibited expenses;
- Impact fee administrative procedures and capital facilities plan update requirements, including conditions under which fees must be refunded (impact fees must, for example, be spent within seven years of collection or refunded);
- Requirements guiding the City's definition of an impact fee service area (the area within which fees will be assessed);
- Impact fee analytical requirements that call for preparation of two reports to support the assessment – impact fee *Land Use Assumptions*, and this *Impact Fee Capital Improvement Plan* (the IFCIP), which documents the calculation methodology and includes a schedule of impact fees by property type.

The IFCIP includes the following:

- The definition of the impact fee service unit – a standard unit of measure for capital facilities demand planning;
- A demand equivalency table that shows the rate of service unit generation (capital facility capacity demand), by property type;
- The number of projected service units attributable to new development (which is a way to quantify the "impacts" of new development;
- The cost per service unit (cost to meet demand from a unit of new development);
- The net cost per service unit (total cost less impact fee reductions);
- An impact fee net cost schedule that shows the net payable impact fee amount, by property type.

The *Development Fees Act* includes three other noteworthy provisions:

1. Platted (and un-built) lots are guaranteed, for a period of four years, the impact fee rate in effect at the time of platting. This protection expires at the end of four years, after which the current fee rates apply. Lots platted prior to the adoption of the impact fees in this report have no such protection (because fees in this report have not been assessed in the past). Future impact fee updates will have effect only for lots platted after enactment of the new fees (along with lots platted more than four years before the update).
2. Impact fee exemption is specifically disallowed for public entities.
3. The City may waive fee assessment for "qualified affordable housing."[3] Qualified units are those affordable to households earning 80% or less of HUD area median income, and which have total monthly shelter costs of less than 30% of gross household income).

Eligible Capital Facility Types

The *Development Fees Act* specifies the types of facilities that are eligible for impact fee assessment:

- Eligible facilities are only those included in the IFCIP.
- Eligible facilities have "…a life expectancy of ten or more years and are owned and operated by or on behalf of a municipality or county."[4]
- Eligible roadway facilities include arterial or collector streets designated on an officially adopted roadway plan and located within the service area, along with "…bridges, bike and pedestrian trails, bus barns, rights-of-way, traffic signals, landscaping and any local components of state and federal highways."[5]
- Eligible public safety facilities include "buildings for fire, police and rescue and essential equipment costing ten thousand dollars ($10,000) or more and having a life expectancy of 10 years or more."[6]
- Eligible stormwater facilities include "…stormwater, drainage and flood control facilities."[7]

In this analysis, the road impact fee only includes arterial streets, and the drainage impact fee includes arroyo crossings. The major roads and drainage impact fees do not include the cost of right-of-way, which will continue to be obtained by purchase, exaction or donation.

Summary of Land Use Assumptions

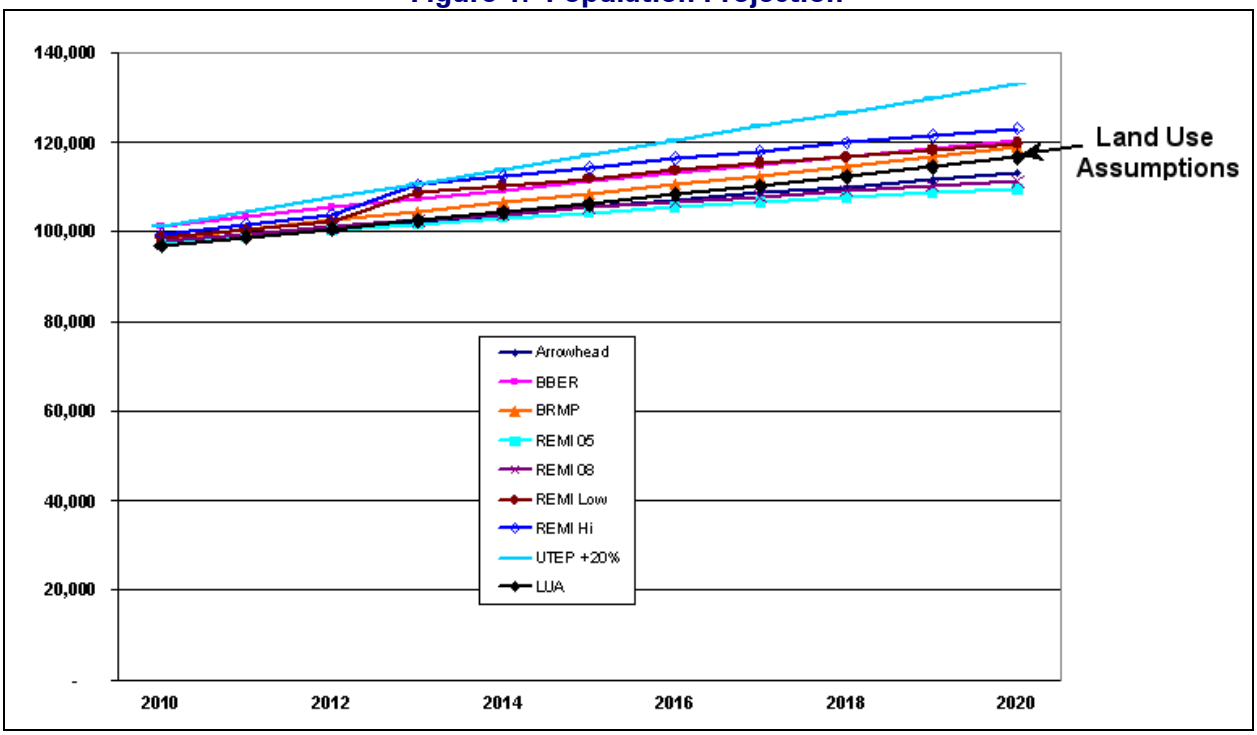
Impact fee land use assumptions show current and future new development, and are the basis for calculating capital facility capacity demand. Land use assumptions are documented in a separate report and were approved by the Capital Improvements Advisory Committee on October 21, 2010 and by the City Council on January 3, 2011.

[3] Section 5-8-3.D, NMSA
[4] Section 5-8-2.D, NMSA
[5] Section 5-8-2.N, NMSA
[6] Section 5-8-2.D (1), NMSA
[7] Section 5-8-2.D (1), NMSA

The *Development Fees Act* requires that land use assumptions cover a period of at least five years[8], and that the IFCIP cover a period not to exceed ten years. Las Cruces land use assumptions are based on a 10-year planning period, which provides an informative, but not overly speculative view of the trend in new development.

The projected trend in Las Cruces population growth is illustrated in Figure 1 on the following page. Population is not directly used in calculation of an impact fee, but does inform and give context to land use projections by property type, which are used for impact fee calculation. Figure 1 shows that the "projected" rate, calculated for this analysis, falls in the midrange of the growth projection series presented in the draft regional planning document.

Figure 1. Population Projection



A summary of the city-wide land use assumptions and the forecast growth from 2010 through 2020 is summarized in Table 4. The population growth rate of 1.9% is conservative compared to the historic rate of about 2.8%; the projected residential growth rate is primarily based on the population growth rate. The commercial growth rate is slightly higher (2.4% per year), but is driven by the residential rate and has the same profile.

[8] Section 5-8-2.J, NMSA of the *Development Fees Act* requires that land use assumptions include "…a description of the service area and projections of changes in land uses, densities, intensities and population in the service area over at least a five-year period."

Table 4. City-Wide Land Use Projection, 2010 to 2020

Land Use	Unit	2010 (Est.)	2020 (Est.)	2010-2020 New Units	2010-2020 Annual Growth
Single-Family	Dwelling	30,315	37,109	6,794	2.0%
Multi-Family	Dwelling	13,634	16,672	3,038	2.0%
Hotel/Motel	Room	2,904	3,145	241	0.8%
Retail	1000 sq. ft.	5,477	6,938	1,461	2.4%
Office/Bank	1000 sq. ft.	4,349	5,486	1,137	2.3%
Other/Institutional	1000 sq. ft.	2,624	3,334	710	2.4%
Industrial	1000 sq. ft.	4,268	5,378	1,110	2.3%

Source: Duncan Associates, *City of Las Cruces Land Use Assumptions for Impact Fees*, October 2010.

As mentioned above, the road and stormwater drainage impact fees in this study are proposed to be assessed only in the growth area of the city. As a result, a separate analysis of existing and future development trends for the growth area was developed in the land use assumptions report. As summarized in Table 5, the projected residential growth rate in the growth area is approximately 3.1% annually, and the commercial growth rate is projected to be 3.3% annually. The higher rate of growth in this area reflects the growth area's role in capturing a majority of the City's recent and future growth and the limited area for redevelopment within the infill area.

Table 5. Growth Area Land Use Projection, 2010 to 2020

Land Use	Unit	2010 (Est.)	2020 (Est.)	2010-2020 New Units	2010-2020 Annual Growth
Single-Family	Dwelling	18,565	25,155	6,590	3.1%
Multi-Family	Dwelling	8,079	10,722	2,643	2.9%
Hotel/Motel	Room	2,079	2,251	172	0.8%
Retail	1000 sq. ft.	2,622	3,624	1,002	3.3%
Office/Bank	1000 sq. ft.	1,989	2,763	774	3.3%
Other/Institutional	1000 sq. ft.	877	1,220	343	3.4%
Industrial	1000 sq. ft.	2,557	3,552	995	3.3%

Source: Duncan Associates, *City of Las Cruces Land Use Assumptions for Impact Fees*, October 2010.

Impact Fee Service Areas

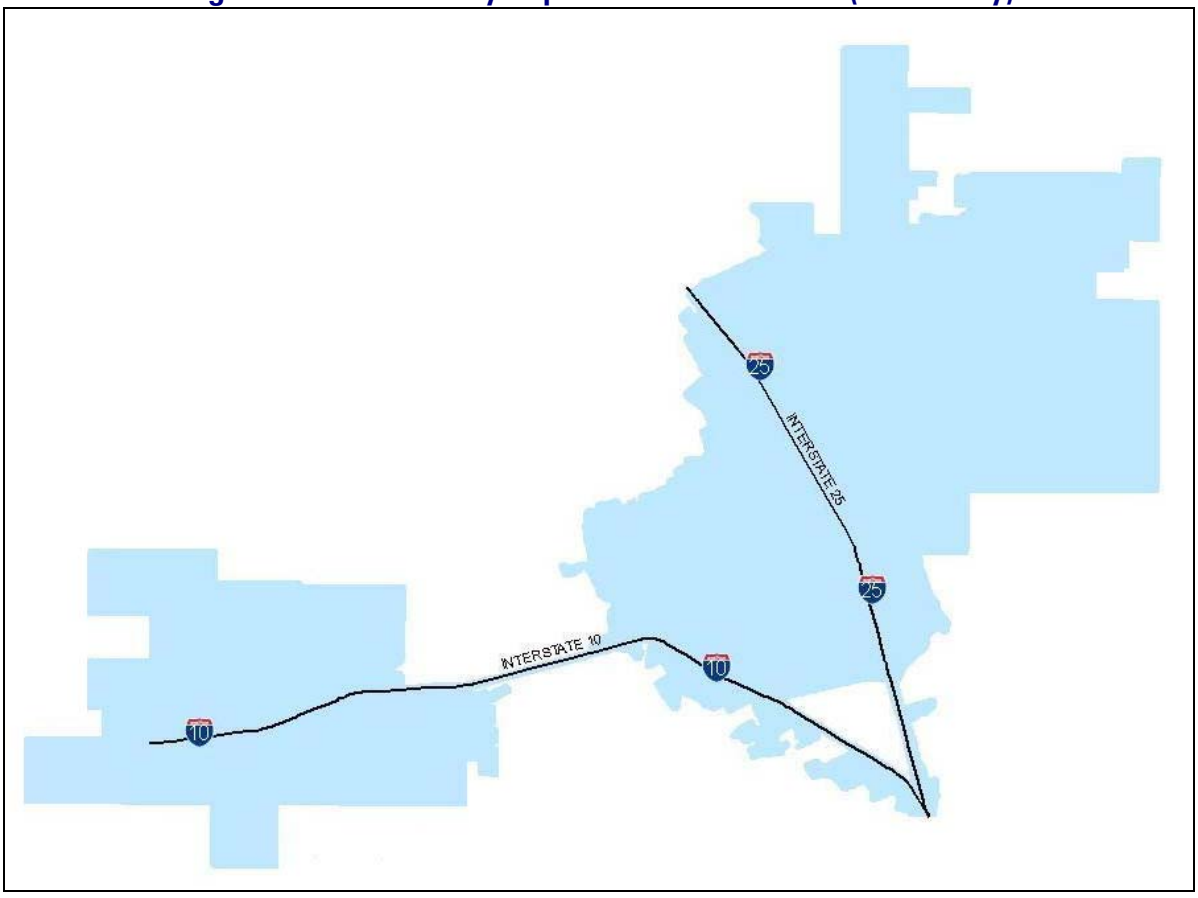
An impact fee service area is a region in which a defined set of improvements provide benefit to an identifiable amount of new development. Within a service area, all new development of a type (single-family, commercial, etc.) is assessed at the same impact fee rate. Land use assumptions and the IFCIP are each defined in terms of this geography, so that capital facility demand, projects needed to meet that demand, and capital facility cost are all quantified in the same terms. Impact fee revenue collected within a service area is required to be spent within that service area.

According to the *Development Fees Act,* service areas are defined based on "…sound planning and engineering standards." This gives local governments considerable discretion. Basic objectives are that subject facilities be accessible to development throughout the area, and that roughly the same level of service (LOS) prevails throughout the area.

Implementation of a large number of small service areas is problematic. Administration is complicated and, because funds collected within the service area must be spent within that area, and spent within a seven-year period, multiple service areas may make it impossible to accumulate sufficient revenue to fund any projects within the time allowed.

The proposed public safety impact fee is structured as a city-wide service area, with the entire city included in the service area designation, as shown in Figure 2. This approach is appropriate, since public safety services are provided on a system-wide basis. Costs for centralized police and fire facilities cannot easily be allocated by subarea, and fire-fighting apparatus located in a particular fire station will respond to calls some distance from the station if the equipment located closer is out on another call, as well as responding four to six units to a single location for structure fire incients. In addition, the definition of a large number of small service areas is problematic and should be avoided for public safety fees, which tend to generate less revenue than road and drainage fees.

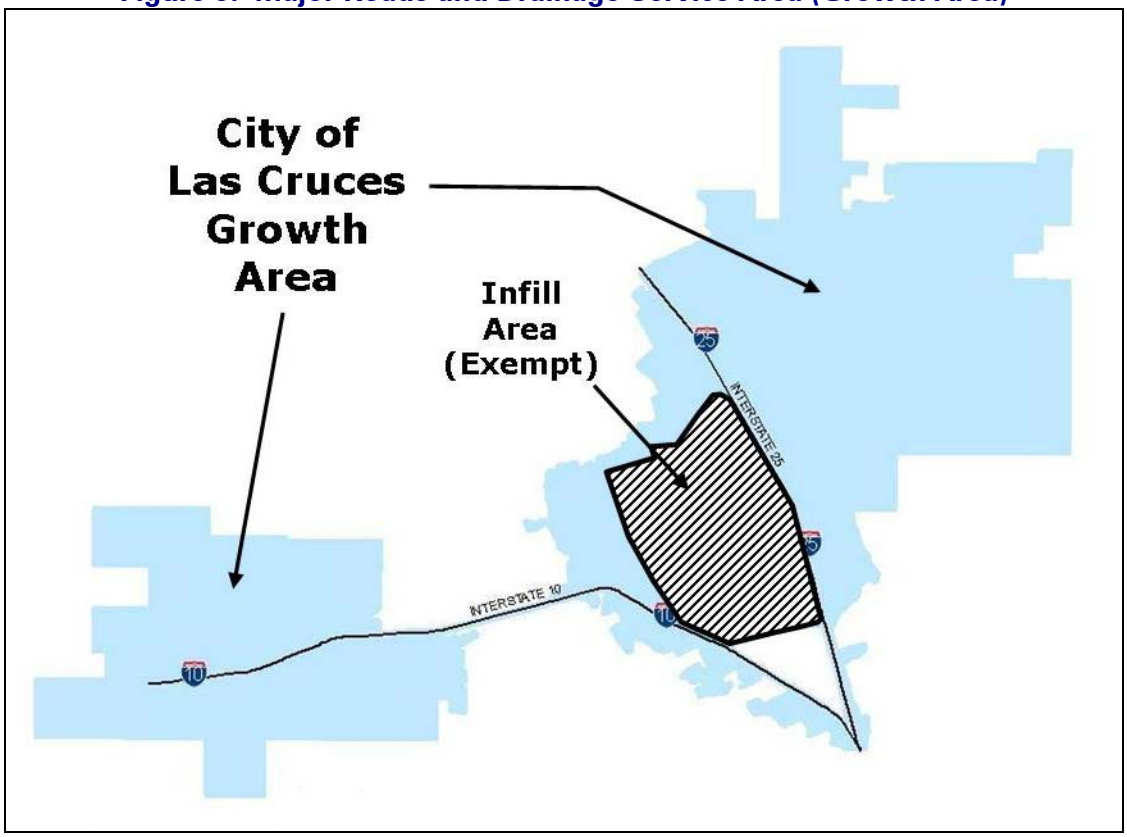
Figure 2. Public Safety Impact Fee Service Area (Entire City)



The City Council has expressed interest in assessing the road and stormwater drainage impact fees in the growth area of the city and exempting the infill area, where much of the infrastructure has already been built and development potential is limited to infill development. The City Council adopted the *Infill Policy Plan*, which was intended to "provide guidelines and incentives for the development of vacant and possibly underutilized parcels or those parcels ready for redevelopment

with Las Cruces' urban core area" in January 1998. The Plan defines the infill area as the area bounded by I-25 on the east, University Avenue on the south, Valley Drive on the west and Hoagland Road, Alameda Boulevard, Three Crosses Avenue and North Main Street on the north (see Figure 3).

Figure 3. Major Roads and Drainage Service Area (Growth Area)



As annexations occur, the boundaries of both of the proposed service areas will expand to include the annexed areas. Annexations are not expected to have a material effect on the amount of the impact fees, because future annexations are expected to be undeveloped land that will not add significant population or housing units. According to City staff, new development is expected to occur to the north and to the east of the current City limits over the 10-year planning horizon of these land use assumptions. Limited development is expected to occur in the near term in the industrial areas near the southwestern portion of the city, which has limited services of its own and relies on the central city area for services.

The *Development Fees Act* makes provision for the assessment of impact fees within a municipality's extraterritorial zone (ETZ).[9] The City and County have established an Extraterritorial Zoning Authority and comprehensive plan, but the City has not negotiated an agreement for the assessment of public safety, road or stormwater impact fees within the ETZ. Therefore, the ETZ is not part of

[9] Section 5-8-3.C, NMSA allows for the provision of capital facility capacity and the assessment of impact fees within the extraterritorial zone by means of a joint powers agreement between the City and County.

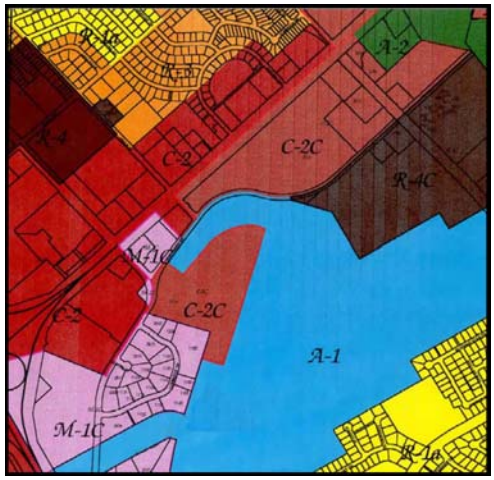
the service area for any of the impact fee facilities (i.e., impact fees will not be collected on any building permits issued outside the City limits).

Impact Fee Calculation Methodology

Impact fees in this report are calculated based on the cost of capital facilities needed to serve new development. The quantity of facilities is based on the current service standard, which means that new development is assessed a fee based on the same standards applied to existing development – new development is not charged for a higher or more expensive level of service (LOS)).

The gross impact fee, calculated in this manner, can be reduced by revenue credits that account for payments by new development for which no benefit will be received – future taxes or user fees for existing service provision, or debt service payments for existing service provision, for example.

The need for credit for a particular impact fee is guided by case law and norms of impact fee practice. The rationale for calculation of impact fee credits is as follows.



One of the most fundamental principles of impact calculation, rooted in case law and norms of equity, is that impact fees should not charge new development for a higher level of service than is provided existing development. While impact fees can be based on a higher level of service than that existing at the time of the enactment of the fees, two things are required if this is to be done. First, a source of funding other than impact fees must be identified and committed to fund the deficiency (created by the new, higher level of service). Second, the fees must be reduced to ensure that new development does not pay twice for the same level of service (once by means of impact fees, and again through general taxes used to remedy the deficiency). In order to avoid these complications, typical practice is to base the fees on the existing LOS.

A corollary principle is that new development should not pay more than its proportionate share, when multiple revenue sources are considered. As noted above, if impact fees are based on a higher-than-existing LOS, then they should be reduced by an amount that accounts for the existing deficiency. A similar situation arises when the existing LOS has not been fully paid for. Outstanding debt on existing facilities that are counted in the existing level of service will be retired, in part, by revenue generated from new development. Given that new development will pay impact

fees to provide the existing level of service for itself, the fact that new development may also pay (by virtue of being part of the tax base at-large) for facilities that provide service to existing development could amount to paying for more than its proportionate share. Consequently, impact fees should be reduced to account for future payments that will retire outstanding debt on existing facilities.

The issue is less clear-cut when it comes to other types of revenue that may be used to make capacity-expanding capital improvements of the type funded by impact fees. In most cases no credit is warranted, since, while new development may contribute to such funding, so does existing development, and both benefit from the higher LOS made possible by the additional funding. In some cases credit may be warranted if the revenue is earmarked for capacity expansion projects of same type funded by the impact fees. Credit may be provided for grants (or other "external" funding sources) if they are dedicated to capacity expansion, and if the grant is considered reliable and ongoing.

MAJOR ROADS

This section calculates the major roads impact fee. Impact-fee-eligible roads are defined by the *Development Fees Act* to include "…arterial or collector streets or roads that have been designated on an officially adopted roadway plan of the municipality or county, including bridges, bike and pedestrian trails, bus space, rights of way, traffic signals, landscaping and any local components of state or federal highways…"[10]

The road impact fees in this study cover the cost of City-owned arterials only. The cost includes paving, curb and gutter, landscaping, streetlights, bike lanes and multi-use trails. Right-of-way and road-related arroyo crossing costs are not included. The City plans to continue the practice of obtaining right-of-way by means of developer dedication (without impact fee credit) or from State and Federal entities. Arroyo crossings by arterial roads are the basis of the stormwater drainage impact fee.

The major roads fee will be implemented by means of a single service area that covers the entire city except for the infill area. There will be a single fee schedule that will apply uniformly throughout the service area. Fees collected will be earmarked to be spent in the service area, meaning road fees cannot be used to fund improvement in the infill area.

Road Impact Fee Credit Issues

While the proposed public safety impact fees would be new fees on development, the proposed major roads impact fees (and the drainage fees, which cover arterial road-related arroyo crossings) would essentially replace the existing system of developer exactions. Most major road capacity expansion projects in the city to-date have been exacted, donated or built/funded by new development. The developer-driven approach has provided a patchwork of improved and unimproved roads, as a consequence of private sector decisions that guide the location and timing of development projects. The City has often not had sufficient control to implement its objective of a continuous, uniform and integrated road system. The developer-driven approach

[10] Section 5-8-2.N, NMSA

is inequitable to the private sector in that projects with extensive arterial road frontage may be required to provide lengthy and expensive arterial road improvements, whereas similar projects with limited or no frontage may provide no road improvements.

Once road impact fees are adopted, developers who make frontage improvements to arterial roads will either be reimbursed with impact fees paid by builders or have the impact fees within their subdivision reduced or eliminated. These reimbursements or impact fee credits should be calculated at 100% of the actual cost of the improvements. For this reason, major roads impact fees should not be adopted at a small percentage of the maximum amount, because this will result in a situation where the funds collected will be insufficient to reimburse developers for the cost of their improvements.

A concern that has been raised in transitioning from a system based on developer exactions to one based on impact fees has to do with developers who made past arterial road improvements. For future impact fee-eligible improvements, developers will enter into a development agreement that will specify how fees will be reduced or the developer will be reimbursed (these are referred to as "post-ordinance" credits). For impact-fee-eligible improvements made by developers prior to the adoption of road impact fees, whether "pre-ordinance" credit is appropriate depends on several factors.

The first factor is whether there is remaining unbuilt development within the project for which the improvement was made. If the project has been completed, no impact fee credit can be provided. Some may argue that this is unfair to developers who made improvements that were in excess of the impact of their project, but such unfairness is inherent in a system of developer exactions based on frontage. Adoption of impact fees makes for a fairer system for the future, but can hardly be expected to rectify all the unfairness of the past. After all, there is no mechanism to recover funds from developers who paid too little for their previous developments.

Assuming that a project for which an improvement was made still has some development potential, a determination must be made as to whether the cost of the improvement exceeds the impact of the portion of the project that has already been developed. To make this determination, the impact of the development on the road system is quantified in terms of the maximum impact fee calculated in this study. Assume that a developer had widened a section of arterial road in front of his proposed 200-unit subdivision, the improvement cost $300,000, and the road impact fees are $2,000 per unit. The 100 units already built that paid no impact fees had an impact of $200,000, leaving a credit of $100,000, or $1,000 a unit, for the remaining 100 units. In this case, the fee would be reduced by half for the remaining units.

The issue becomes more complicated if the road impact fee is adopted at less than 100 percent of the maximum fee calculated in this study. In the example given above, suppose that the fee is adopted at 75 percent of the maximum fee, or $1,500 per unit. If the impact of the first 100 units already built is measured at the maximum fee, the credit is $1,000 for the remaining units, meaning that they would pay only $500, or one-third of the adopted fee. If on the other hand the impact of the first 100 units is measured in terms of the adopted fee amount, the credit for the remaining 100 units would be $1,500 per unit, meaning that no fees would be collected. While either approach would be reasonable, use of the maximum fee to measure the impact of pre-ordinance development is preferable. Suppose for example, that the fee is phased-in over three years, increasing from 25 percent in the first year, 50 percent the second year, 75 percent the third year and 100 percent at the

end of the third year. Under such a phase-in plan, it would make little sense to measure the impact of pre-ordinance development based on the initial 25-percent fee.

Finally, consider the implications of adopting the fee at less than 100 percent for post-ordinance credits. Suppose that the fee is adopted at only 25 percent of the maximum, or $500 rather than $2,000 per unit. A developer of a new 200-unit subdivision is required to make an improvement that costs $300,000, which is three times what his subdivision would pay in impact fees. Some might argue that since the fees are only recovering 25 percent of the full cost, the developer should only get credit for 25 percent of the cost of his improvement, which would be $75,000 or $375 per unit. However, while this may be intuitively reasonable from the City's perspective, developers who are required to make improvements would be at a disadvantage compared to other developers who only have to pay the reduced fee. To ensure that the impact fee system creates a level playing field, it will be necessary to give developers full credit for the value of the improvements they make, regardless of whether the fees are charged at the full amount. To retain the element of equity, it would be necessary to reimburse this developer $200,000 for his excess contribution from road impact fees paid by other developments.

This last example underscores the desirability of adopting the road impact fee at or close to 100 percent of the full calculated amount. Otherwise, the fees will not generate enough revenue to compensate developers who make improvements that cost more than the impact fees that their projects will generate.

Service Unit

The *Development Fees Act* requires that a standard measure of capital facilities demand – a "service unit" – be specified for each impact fee. Section 5-8-2.P, NMSA, defines "service unit" as:

> "…a measure of consumption, use, generation or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards for a particular category of capital improvements or facility expansions."

A common measure of capital facilities capacity demand is an "equivalent dwelling unit" (EDU), which expresses demand in terms of single-family equivalent units. A multi-family dwelling unit, for example, might be shown to require ¾ of the capital facility capacity typical of a single-family unit. This means that multi-family demand is equivalent to 0.75 EDUs.

The major roads EDU will be quantified in terms of relative travel demand. The travel demand generated by specific land use types is a product of three factors: 1) trip generation, 2) percent new trips and 3) trip length. The first two factors are well documented in the professional literature, and the average trip generation characteristics identified in studies of communities around the nation should be reasonably representative of trip generation characteristics in Las Cruces. In contrast, trip lengths are much more likely to vary between communities, depending on the geographic size and shape of the community and its major street system.

Trip Generation

Trip generation rates are based on information published in the 2008 edition of the Institute of Transportation Engineers' (ITE) *Trip Generation* manual, which is the most recent published edition of the manual. Trip generation rates represent trip ends, or driveway crossings from the site of a land use. Thus, a one-way trip from home to work counts as one trip end for the residence and one trip end for the work place. To avoid over-counting, all trip rates have been divided by two. This places the burden of travel equally between the origin and destination of the trip and eliminates double-charging for any particular trip.

Single-family travel demand (as calculated in Table 12) is shown in two alternative forms: an average for all single-family units, and a "variable rate" demand schedule, with estimates of demand by unit square footage ranges. The variable rate option shows lower demand for smaller homes, and may offer an advantage with respect to housing affordability. Either option can be used to assess the major roads impact fee.

Data on household size by square feet are available from the 2007 American Housing Survey. This data can be used to estimate the relative household size for the tiered single-family impact fee categories used in this study. As can be seen in Table 6, average household sizes for single-family units are strongly related to the size of the unit.

Table 6. Tiered Single-Family Household Size, U.S.

Unit Size	Household Population	Households	AHHS	Ratio to All Units
< 1,500 sf	52,799,905	21,142,166	2.50	0.92
1,500-2,499 sf	80,761,944	29,799,926	2.71	1.00
2,500 + sf	50,438,444	16,722,243	3.02	1.11
Total	184,000,293	67,664,335	2.72	1.00

Source: US Department of Housing and Urban Development, 2007 American Housing Survey, data weighted by the most recent Census geography.

For Las Cruces, the tiered average household size for the single-family units can be estimated by multiplying the untiered household size by the national ratio of average household size for each size category. The average household size in Las Cruces is similar to the national average; thus, the tiered average household size data used in this study summarized in Table 7 are the same as the national averages.

Table 7. Tiered Single-Family Household Size, Las Cruces

Unit Size	Untiered Avg. HH Size	Ratio to All Units	Tiered Avg. HH Size
Single-Family, Detached (All)	2.72		
< 1,500 sf		0.92	2.50
1,500-2,499 sf		1.00	2.71
2,500 + sf		1.11	3.02

Source: Untiered average single-family household size from Table 33; ratios from Table 6; tiered household size is project of untiered household size and ratio.

Data from the National Cooperative Highway Research Program reveal that the number of trips generated by a dwelling unit is strongly related to the number of persons residing in the unit. The average household sizes for the three single-family size categories are used to model the trip rates for

each category. Specific trip rates for unit size categories used in the demand schedule are shown in Table 8.

Table 8. Single-Family Trip Rates by Unit Size

Unit Size	Average Household Size	Modeled Daily Trip Ends
Single-Family, Detached (All)	2.72	9.57
< 1,500 sf	2.50	8.86
1,500-2,499 sf	2.71	9.57
2,500 + sf	3.02	10.53

Source: Average household sizes from Table 7; daily trips derived from Transportation Research Board, NCHRP Report 365, "Travel Estimation Techniques for Urban Planning," Washington, D.C.: National Academy Press, Table 9 (for areas with populations of 50,000-199,999), 1998 (based on household sizes) and are normalized to the ITE rate for single-family.

New Trip Factor

Trip rates also need to be adjusted by a "new trip factor" to exclude pass-by and diverted-linked trips. This adjustment is intended to reduce the possibility of over-counting by only including primary trips generated by the development. Pass-by trips are those trips that are already on a particular route for a different purpose and simply stop at a particular development on that route. For example, a stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. A pass-by trip does not create an additional burden on the street system and therefore should not be counted in the assessment of impact fees. A diverted-linked trip is similar to a pass-by trip, but a diversion is made from the regular route to make an interim stop. The reduction for pass-by and diverted-linked trips is drawn from ITE and other published information.

Average Trip Length

In the context of a road impact fee based on a consumption-based methodology, it is important to determine the average length of a trip on the City's arterial road system in the area that will be served by the impact fee. The point of departure in developing local trip lengths is to utilize national data. The U.S. Department of Transportation's *2001 National Household Travel Survey* identifies average trip lengths for specific land uses and trip purposes. These trip lengths are unlikely to be representative of travel on the road system in the growth area, given that they include travel on interstates, collector roads and local streets. Nevertheless, the relative lengths of trips for different land uses derived from the national data should be reasonably representative of trips in the growth areas of Las Cruces as well. An adjustment factor can be derived by dividing the VMT that is actually observed on the City's arterial roadway system by the VMT that would be expected using national average trip lengths and trip generation rates.

The first step is to estimate the total VMT expected to be generated by existing development in the growth area of Las Cruces based on national travel demand characteristics. This can be accomplished by taking existing land uses in the growth area and multiplying existing development in each land use category by the appropriate national trip generation rates, new trip factors and trip lengths, and then summing for all land uses. As shown in Table 9, existing service area land uses, using national trip generation and trip length data, would be expected to generate approximately 1.40 million VMT during an average week day.

Table 9. Expected Service Area Vehicle-Miles of Travel

Land Use Type	ITE Code	Unit	Existing Units	1/2 Trip Rate	Primary Trips	Length (miles)	Daily VMT
Single-Family	210	Dwelling	18,565	4.79	100%	8.74	777,216
Multi-Family	220	Dwelling	8,079	3.36	100%	7.76	210,649
Hotel/Motel	310/320	Room	2,079	3.45	100%	7.33	52,556
Retail/Commercial	820	1,000 sq ft	2,622	21.47	43%	6.60	159,661
Office/Bank	710	1,000 sq ft	2,763	5.51	95%	7.33	106,013
Other/Institutional	620	1,000 sq ft	877	3.79	95%	7.33	23,145
Industrial	140	1,000 sq ft	2,557	3.48	95%	8.89	75,151
Total							1,404,391

Source: Trip rate and primary trip percent from Table 12; trip length from Table 11; existing units from Table 13; total VMT is the product of VMT per unit and land use.

The trip length adjustment factor is the ratio of actual VMT to expected VMT. Actual VMT is based on a count of daily trips on arterial roads in the service area, and is calculated for each road segment as the product of traffic count and measured segment length. Expected VMT is calculated based on national averages for trip generation and average trip length. As shown in Table 10, the trip length adjustment factor for the road impact fee service area is 0.327.

Table 10. Local Trip Length Adjustment Factor

Total Daily VMT on Arterial Road System	459,245
÷ Expected Daily Vehicle-Miles of Travel	1,404,391
Local Trip Length Adjustment Factor	0.327

Source: Actual VMT from Table 48, Appendix A; expected VMT from Table 9.

Average trip lengths by land use are derived from the *National Household Travel Survey*, published by the U.S. Department of Transportation. For purposes of impact fee calculation, national trip length data for small metropolitan areas is adjusted to better represent local trips, as shown in Table 11. Significantly lower local major road trip lengths are to be expected, because they exclude travel on interstates, state highways, collector streets, local streets and any road outside the growth area.

Table 11. Average Trip Length by Trip Purpose

Trip Purpose	National Avg. Trip Length (miles)	Local Adjustment Factor	Local Trip Length (miles)
Single-Family, Detached	8.74	0.327	2.86
Multi-Family	7.76	0.327	2.54
Shopping	6.60	0.327	2.16
Family/Personal	7.33	0.327	2.40
Average	8.89	0.327	2.91

Source: Average trip lengths for small (<250,000) metro areas from the U.S. Department of Transportation, *2001 National Household Travel Survey*, 2001; the local adjustment factor from Table 10.

Demand Equivalency Table

The *Development Fees Act* requires that the ICFP include a demand equivalency table that specifies capital facility capacity demand by property type. As required by the *Act*:[11]

> the demand equivalency table is "…a definitive table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial."

The demand equivalency table used for the road impact fee in this study is presented in Table 12; this schedule is also used in the drainage impact fee in this update. The service unit generation rate for a given property type is the ratio is the ratio of VMT for that property type to VMT for single-family. VMT is calculated as the product of trip rate, primary trip percentage and trip length. The EDU factor represents the demand equivalency of the VMT for each land use in relation to the VMT of a single-family detached unit. The travel demand equivalency schedule is used for the major roads impact fee and drainage impact fee.

Table 12. Travel Demand Equivalency Schedule

Land Use Type	ITE Code	Unit	1-Way Trips	Primary Trips	Length (miles)	Daily VMT	EDU Factor
Single-Family Detached (Average)	210	Dwelling	4.79	100%	2.86	13.69	1.00
< 1,500 sf	210	Dwelling	4.43	100%	2.86	12.66	0.92
1,500-2,499 sf	210	Dwelling	4.79	100%	2.86	13.69	1.00
2,500 + sf	210	Dwelling	5.27	100%	2.86	15.06	1.10
Multi-Family	220	Dwelling	3.33	100%	2.54	8.45	0.62
Hotel/Motel	310/320	Room	3.45	100%	2.40	8.27	0.60
Commercial/Retail	820	1000 sq ft	21.47	43%	2.16	19.92	1.46
Office	710	1000 sq ft	5.51	95%	2.40	12.55	0.92
Institutional	620	1000 sq ft	3.79	95%	2.40	8.63	0.63
Industrial	130	1000 sq ft	3.48	95%	2.91	9.61	0.70
Warehouse	150	1000 sq ft	1.78	95%	2.91	4.92	0.36
Mini-Warehouse	151	1000 sq ft	1.25	95%	2.91	3.45	0.25

Source: 1-way trips are ½ of trip ends from Institute of Transportation Engineers (ITE), *Trip Generation*, 8th Edition, 2008, except trip rates for variable rate single-family from Table 8; primary trip percent for commercial retail (based on shopping center) from the ITE, *Trip Generation Handbook*, June 2004; trip length from Table 11; daily VMT is the product of trip rate, primary trips, and trip length; EDU factor is daily VMT relative to single-family detached unit average.

Current and Projected Service Units

Section 5-8-6.A(5), NMSA, requires that the IFCIP contain a projection of service units attributable to new development. Future service units are estimated based on residential and nonresidential projections for the growth area from the land use assumptions analysis. The projected service units in this study are used for both the major roads and drainage impact fees. Current and projected city-wide service units are also shown, since this data is necessary in developing the revenue credit calculation. As shown in Table 13, the total number of service units in the growth area is projected to grow an estimated 11,420 by 2020, while city-wide growth will be 13,226 EDUs by 2020.

[11] Section 5-8-6A.(4), NMSA

Table 13. Projected Road and Drainage Service Units, 2010 to 2020

		Development Units		EDU/	Service Units		
Land Use Type	Unit	2010	2020	Unit	2010	2020	New
Single-Family	Dwelling	18,565	25,155	1.00	18,565	25,155	6,590
Multi-Family	Dwelling	8,079	10,722	0.62	5,009	6,648	1,639
Hotel/Motel	Room	2,079	2,251	0.60	1,247	1,351	104
Retail	1000 sq ft	2,622	3,624	1.46	3,828	5,291	1,463
Office/Bank	1000 sq ft	1,989	2,763	0.92	1,830	2,542	712
Other/Institutional	1000 sq ft	877	1,220	0.63	553	769	216
Industrial	1000 sq ft	2,557	3,552	0.70	1,790	2,486	696
Total, Impact Fee Service Area					32,822	44,242	11,420
Single-Family	Dwelling	30,315	37,109	1.00	30,315	37,109	6,794
Multi-Family	Dwelling	13,634	16,672	0.62	8,453	10,337	1,884
Hotel/Motel	Room	2,904	3,145	0.60	1,742	1,887	145
Retail	1000 sq ft	5,477	6,938	1.46	7,996	10,129	2,133
Office/Bank	1000 sq ft	4,349	5,486	0.92	4,001	5,047	1,046
Other/Institutional	1000 sq ft	2,624	3,334	0.63	1,653	2,100	447
Industrial	1000 sq ft	4,268	5,378	0.70	2,988	3,765	777
Total, City-Wide					57,148	70,374	13,226

Source: 2010 and 2020 units by land use type from Table 4 and Table 5; EDUs per unit from Table 12.

Roadway Capacity

Nationally-accepted transportation level of service (LOS) categories have been developed by the transportation engineering profession. Six categories, ranging from LOS A to LOS F, describe driving conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience and safety. LOS A represents free flow, while LOS F represents the breakdown of traffic flow, characterized by stop-and-go conditions.

In contrast to LOS, service volume capacity is a quantitative measure, expressed in terms of the rate of flow (vehicles passing a point during a period of time). Service volume capacity represents the maximum rate of flow that can be accommodated by a particular type of roadway while still maintaining a specified LOS. The service volume capacity at LOS E represents the maximum volume that can be accommodated before the flow breaks down into stop-an-go conditions that characterize LOS F, and thus represents the ultimate capacity of the roadway.

Las Cruces planning assumes LOS D for major roads. This is based on the advice of the City transportation engineers and Las Cruces Metropolitan Planning Organization staff. LOS D is considered to be consistent with residents' current experience and expectations as to traffic congestion and travel time. In making road improvement decisions, the goal is to maintain the existing level of service and not allow the existing road operating conditions to be degraded.

The capacity of an individual roadway depends on a number of factors, including number of lanes, lane width, topography, percent of truck traffic, etc. In impact fee analysis, generalized capacity estimates are typically used based strictly on number of lanes. The road capacities by number of lanes for Las Cruces are shown in Table 14.

Table 14. Daily Vehicle Capacities

	Total Capacity	Capacity/ Lane
1 Lane	6,000	6,000
2 Lane	12,600	6,300
3 Lane	15,100	5,033
4 Lane	26,800	6,700
5 Lane	31,900	6,380
6 Lane	40,600	6,767
7 Lane	48,300	6,900
8 Lane	54,200	6,775

Source: Maximum service volumes at LOS D from Las Cruces MPO planning staff and City traffic engineer.

For impact fee purposes, the LOS on the arterial roadway system in the growth area is the system-wide ratio of road capacity to travel demand (VMC/VMT), calculated as shown in Table 15. The LOS is a measure of capacity utilization. It is quantified in such a way as to plan adequate capacity to meet demand from new development at the current service provision standard, and to preserve current excess capacity so as to meet residents' expectations as to travel time and an acceptable level of congestion. The impact fee in this update is not designed to recover the full costs to maintain the desired or current LOS on all roadway segments. Instead, the level of service standard in this study is an assumed system-wide VMC/VMT ratio of one, and the fee is designed to fund the capacity consumed by new development so that the existing system-wide ratio of capacity to demand is maintained. Since the City's major roadway system currently operates at a LOS better than this, there are no existing deficiencies on a system-wide basis, as shown in Table 15.

Table 15. Existing System-Wide Arterial Level of Service

Functional Classification	Existing VMC	Existing VMT	LOS (VMC/VMT)
Principal Arterial	636,537	381,525	1.67
Minor Arterial	110,997	77,720	1.43
Total	747,534	459,245	1.63
Assumed Impact Fee LOS			1.00

Source: Existing capacity (VMC) and capacity demand (VMT) from Table 48, Appendix A.

Cost per Service Unit

The road impact fee is designed to cover the cost of adding capacity to the arterial roadway system, including principal arterials and minor arterials. The cost includes paving, curb and gutter, street lights, signalization, bike lanes and multiuse trails. The cost of demand from new development is calculated as the product of cost per VMC, road LOS, VMT per service unit and number of new development service units. VMT per service unit is the rate for a single-family unit, which by definition is one EDU.

The road costs are based on the cost of new capacity added by planned road widening and expansion projects. The planned projects and their costs are derived from the City's 2010 to 2015 Capital Improvement Plan (CIP) and the 2015-2020 Master Transportation Plan. Road costs are

estimated by City staff, based on current economic conditions, and based on construction and other costs from recently completed projects. The road costs exclude costs associated with the arroyo crossings, since arroyo crossings are included in the stormwater drainage impact fee. As shown in Table 16, capacity-expanding road improvements cost approximately $0.6 million per lane-mile.

Table 16. Road Improvement Project Costs

Road Segment	Miles	New Lanes	Total Cost	New Ln-Mi	Cost/ Lane-Mile
CIP Projects (2010 to 2015)					
Del Rey Blvd - N. of Sandhill Arroyo	1.12	4	$2,471,742	4.48	$551,728
Roadrunner Parkway - HWY 70 to Settlers Pass	0.66	4	$1,466,288	2.64	$555,412
Sonoma Ranch Blvd - Lohman Ave to Dripping Springs Road	2.18	4	$4,817,803	8.72	$552,500
Sonoma Ranch Blvd - Vista Belleza to City Limits	3.14	4	$6,954,394	12.56	$553,694
Porter North of US 70 to Payan Rd	0.30	2	$326,773	0.60	$544,621
Porter North - Payan Rd to Peachtree Hills Road	0.54	4	$1,200,261	2.16	$555,677
Mesa Grande North of U.S. 70 to Cortez Ave	3.14	4	$6,954,394	12.56	$553,694
Mesa Grande Drive - North of Mesa Central St to Calle Jitas	1.99	4	$4,398,864	7.96	$552,621
Engler/Thurmond Rd - McGuffey to 270' E. of Calle Pico Gemelo	1.03	4	$2,270,652	4.12	$551,129
Calle Jitas - Sonoma Ranch Blvd to Silver Hawk	0.87	2	$965,655	1.74	$554,974
Calle Jitas - Prado Del Sol to Mesa Grande	0.21	4	$460,833	0.84	$548,611
Missouri Ave - 225' W. of Candeleras St. to Sonoma Ranch Blvd	0.97	4	$2,136,591	3.88	$550,668
Master Transportation Plan Projects (2015 to 2020)					
Mesa Grande Drive - Calle Jitas to Lohman	1.56	4	$3,456,250	6.24	$553,886
Engler Road - Del Rey Bvd to 460 ft W. of Kilbourne Hole Dr	0.28	4	$615,841	1.12	$549,858
Engler Road - Kilbourne Hole Dr to 150' E. of Salado Creek St.	0.78	2	$307,920	1.56	$197,385
Engler Road - Salado Creek St. to 270' E. of Calle Pico Gemelo	1.45	4	$3,217,455	5.80	$554,734
Engler Road - Del Rey Bvd to 200' E of I-25	0.28	4	$611,652	1.12	$546,117
Engler Road - I-25 to El Camino Real	1.10	4	$2,429,848	4.40	$552,238
Porter Road - Hwy 70 to Lohman Ave	4.22	4	$12,333,132	16.88	$730,636
Sonora Springs - Sonoma Ranch Blvd to Weisner	3.98	4	$10,733,333	15.92	$674,204
Weisner Road - Hwy 70 to Dripping Springs	7.01	4	$17,733,333	28.04	$632,430
Total	**36.81**		**$85,863,014**	**143.34**	**$599,016**

Source: Road projects, road length, number of lanes and cost from City of Las Cruces Public Works Department; master plan projects are from the Las Cruces Metropolitan Planning Organization; costs and project data updated by Las Cruces Public Works Department staff, October 7 and 22, 2010.

The additional capacity created by the planned road projects varies by road type and is based on the daily vehicle capacity of the improved road less the capacity of the existing road. As shown in Table 17, the average road cost is $89 per VMC.

Table 17. Road Improvement Cost per VMC

Road Segment	Miles	Capacity Before	Capacity After	New VMC	Total Cost	Cost/ VMC
CIP Projects (2010 to 2015)						
Del Rey Blvd - N. of Sandhill Arroyo	1.12	na	26,800	30,016	$2,471,742	$82
Roadrunner Parkway - HWY 70 to Settlers Pass	0.66	na	26,800	17,688	$1,466,288	$83
Sonoma Ranch Blvd - Lohman Ave to Dripping Springs Road	2.18	na	26,800	58,424	$4,817,803	$82
Sonoma Ranch Blvd - Vista Belleza to City Limits	3.14	na	26,800	84,152	$6,954,394	$83
Porter North of US 70 to Payan Rd	0.30	12,600	26,800	4,260	$326,773	$77
Porter North - Payan Rd to Peachtree Hills Road	0.54	na	26,800	14,472	$1,200,261	$83
Mesa Grande North of U.S. 70 to Cortez Ave	3.14	na	26,800	84,152	$6,954,394	$83
Mesa Grande Drive - North of Mesa Central St to Calle Jitas	1.99	na	26,800	53,332	$4,398,864	$82
Engler/Thurmond Rd - McGuffey to 270' E. of Calle Pico Gemelo	1.03	na	26,800	27,604	$2,270,652	$82
Calle Jitas - Sonoma Ranch Blvd to Silver Hawk	0.87	12,600	26,800	12,354	$965,655	$78
Calle Jitas - Prado Del Sol to Mesa Grande	0.21	na	26,800	5,628	$460,833	$82
Missouri Ave - 225' W. of Candeleras St. to Sonoma Ranch Blvd	0.97	na	26,800	25,996	$2,136,591	$82
Master Transportation Plan Projects (2015 to 2020)						
Mesa Grande Drive - Calle Jitas to Lohman	1.56	na	26,800	41,808	$3,456,250	$83
Engler Road - Del Rey Bvd to 460 ft W. of Kilbourne Hole Dr	0.28	na	26,800	7,504	$615,841	$82
Engler Road - Kilbourne Hole Dr to 150' E. of Salado Creek St.	0.78	12,600	26,800	11,076	$307,920	$28
Engler Road - Salado Creek St. to 270' E. of Calle Pico Gemelo	1.45	na	26,800	38,860	$3,217,455	$83
Engler Road - Del Rey Bvd to 200' E of I-25	0.28	na	26,800	7,504	$611,652	$82
Engler Road - El Camino Real to Elks	1.10	na	26,800	29,480	$2,429,848	$82
Porter Road - Hwy 70 to Lohman Ave	4.22	na	26,800	113,096	$12,333,132	$109
Sonora Springs - Sonoma Ranch Blvd to Weisner	3.98	na	26,800	106,664	$10,733,333	$101
Weisner Road - Hwy 70 to Dripping Springs	7.01	na	26,800	187,868	$17,733,333	$94
Total	**36.81**			**961,938**	**$85,863,014**	**$89**

Source: Daily road capacity from Table 14; VMC is the product of net new capacity (excluding existing lanes) and road length; road cost from Table 16; cost per VMC is the quotient of road cost and VMC.

The cost per vehicle-mile derived from the planned improvement project costs is multiplied by the impact fee level of service to derive the cost per VMT. The cost per service unit is derived by multiplying the cost per VMT by the VMT associated with a single-family EDU. As shown in Table 18, the impact fee cost is $1,218 per service unit.

Table 18. Road Cost per Service Unit

Cost per VMC	$89
x Assumed Impact Fee LOS (ratio of VMC/VMT)	1.00
Cost per VMT	$89
x VMT per EDU (Single-Family, Detached)	13.69
Cost per EDU	**$1,218**

Source: Cost per VMC from Table 17; LOS ratio from Table 15; VMT per EDU based on single-family average daily VMT per unit from Table 12.

Section 5-8-6.A(6), NMSA requires that the IFCIP include a projection of capital improvements needed to meet demand from new development. Table 19 shows that the cost to provide new road capacity to meet the forecast demand for road facilities in the impact fee service area is $13.9 million.

Table 19. Road Capital Improvement Need, 2010-2020

Cost per EDU	$1,218
x Projected New EDUs, 2010-2020	11,420
Cost to Meet Demand from New Development. 2010-2020	$13,909,560

Source: Cost per EDU from Table 16; projected new development from Table 13.

Net Cost per Service Unit

The total cost of capital facilities needed to meet demand from new development is quantified in the previous section. This section shows the calculation of net cost per service unit, which is the amount of the impact fee, and which is less than total cost because of impact fee credits. The road impact fee is reduced by a credit for future, non-local revenue that will be used to fund capacity for new development.

The rational underlying the need for credit (discussed in detail on page 10), is as follows:

- New development should not pay for a level of service higher than that provided existing development.

- New development should not pay more than its proportionate share of the cost of requisite new capacity (including consideration of other capital revenue).

- Credit may be appropriate for capital facility funding attributable to new development, or for future payments by new development to retire existing debt.

Evaluation of the need for impact fee credit is guided in part by interviews with public works and engineering staff to define current and expected future capital facilities funding practice.

- There are three sources of external revenue for roads – municipal arterial grants, co-op grant funding and legislative appropriations. These are, in part, earmarked for road capacity expansion. The exact amount used for capacity expansion varies from year to year.

- Aside from sources shown above, the City does not receive or anticipate other external revenue sources that are dedicated to the capacity expansion.

- There is one item of existing debt used to fund roadway construction. This debt is secured, and in part may be paid, by property tax from properties which abut the road (front footage). To the extent that an individual property owner claims to have contributed to this improvement in ways not acknowledged in this analysis, the property owner may apply for a fee reduction at the time of impact fee payment, by means of the procedure for case-specific impact fee calculation.

- If impact fee eligible capital facilities identified in this IFCIP are obtained by means of exaction or contribution, impact fee credit will be calculated at the time the impact fee is assessed for the contributing development.

Table 20 summarizes funding sources other than local revenue (funding from state and federal agencies including grants, legislative funds and other) that have been, and are expected to continue to be, available to fund road capacity expansion during the planning period covered by this analysis. Among the funding sources examined, the funds that the City receives from the New Mexico Department of Transportation and through the State's legislative appropriation process are eligible for an impact fee credit, since they are used for road capacity expansion. The other funding sources are not used by the City for capacity expansion, and Federal grants for roads are generally uncertain and not a recurring funding source for capacity expansion.

Table 20. Funding Sources for Major Road Capacity Expansion

Revenue Source	Subject to Impact Fee Revenue Credit
Street Light Bond (GRT revenue bond)	No - not used for road capacity expansion
Gross Receipts Tax	No - used for roadway maintenance
Federal Funds	No - funding (if any) is uncertain, and timing is not known
NM Dept. of Transportation Municipal Arterial Grant NM Dept. of Transportation Co-op. Grant Funding State of New Mexico Legislative Appropriation	Yes - ongoing revenue source, part of which is earmarked for road capacity expansion for new development

The credit analysis for funds from the State assumes that all of the funding is used for capacity expansion. As shown in Table 21, annual State revenue available to fund capital facility capacity expansion for new development is $0.6 million.

Table 21. State Funding for Road Capacity

Funding Source	Annual Funding	Capacity Share	Capacity Funding
NM Dept. of Transportation Municipal Arterial Grant	$450,000	100%	$450,000
NM Dept. of Transportation Co-op. Grant Funding	$50,000	100%	$50,000
State of New Mexico Legislative Appropriation	$100,000	100%	$100,000
Total Annual State Capacity Funding			**$600,000**

Source: City of Las Cruces Public Works Department, August 16, 2007 memorandum.

As shown in Table 22, the credit is calculated as the present value of annual external road revenue per service unit. City-wide EDUs are used in the calculation, since the funding is received by the City and may be used outside of the growth area. Assuming that the City will continue to receive a similar amount of State funding for capacity expanding projects, new development will generate the present value equivalent of approximately $162 in capacity funding per EDU over the next 25 years.

Table 22. Road State Funding Credit

Total Annual State Capacity Funding	$600,000
÷ City-Wide Service Units (EDUs), 2010	57,148
Average Annual Funding per EDU	$10.50
x Net Present Value Factor (25 years @ 4.1%)	15.46
State Funding Credit per EDU	**$162**

Source: Annual total revenue from Table 21; City-wide EDUs from Table 10; present value factor based on 25 years at 4.1% discount rate based on three-month average interest rate on state and local bonds (July through September 2010) from the Federal Reserve at http://www.federalreserve.gov/ releases/h15/data.html.

As shown in Table 23, reducing the major roads net cost per service unit by the State funding revenue credit leaves a net cost of $1,056 per EDU.

Table 23. Road Net Cost per Service Unit

Cost per Service Unit (EDU)	$1,218
– State Funding Credit per EDU	-$162
Net Cost per EDU	**$1,056**

Source: Cost per service unit from Table 19; State funding revenue credit from Table 22.

Potential Impact Fee Schedule

The maximum fees that can be adopted by the City based on this study are derived by multiplying the EDU factor for each land use by the net cost per service unit. The potential fee schedule is shown in Table 24. The fee schedule provides the option of charging single-family residential uses either a flat rate or a tiered rate that varies by the size of the dwelling unit.

Table 24. Potential Road Impact Fee

Land Use Type	Unit	EDU/ Unit	Net Cost/ EDU	Net Cost/ Unit
Single-Family Detached (Average)	Dwelling	1.00	$1,056	$1,056
Single-Family (Variable Rate Option)				
< 1,500 sf	Dwelling	0.92	$1,056	$972
1,500-2,499 sf	Dwelling	1.00	$1,056	$1,056
2,500 + sf	Dwelling	1.10	$1,056	$1,162
Multi-Family	Dwelling	0.62	$1,056	$655
Hotel/Motel	Room	0.60	$1,056	$634
Commercial/Retail	1000 sq ft	1.46	$1,056	$1,542
Office	1000 sq ft	0.92	$1,056	$972
Institutional	1000 sq ft	0.63	$1,056	$665
Industrial	1000 sq ft	0.70	$1,056	$739
Warehouse	1000 sq ft	0.36	$1,056	$380
Mini-Warehouse	1000 sq ft	0.25	$1,056	$264

Source: EDUs per unit from Table 12; net cost per EDU from Table 23.

Table 25 shows potential total revenue over the next 10 years, assuming that impact fees are assessed at the proposed rate, and that growth occurs as projected in the *Land Use Assumptions*.

Table 25. Potential Road Impact Fee Revenue

New EDUs, 2010 to 2020	11,420
x Net Cost per Service Unit	$1,056
Potential Impact Fee Revenue	$12,059,520
÷ Years	10
Annual Average Impact Fee Revenue	$1,205,952

Source: New growth area service units from Table 13; net cost per service unit from Table 23.

Capital Facilities Plan

The *Development Fees Act* requires that impact fees be used to fund facilities identified in the IFCIP that provide capacity needed to meet demand from new development.[12] City transportation engineers and MPO planners have defined a list of planned road capacity expansion projects in the growth area, as shown in Table 26. The value of the planned projects is $85.9 million, compared to projected total impact fee revenue of $12.1 million. The timeframe and funding for each project are as recommended by City staff, but are not definitive – specific projects will be selected for construction at specific times by means of a process of review and approval, by the City Council. The City plans to continue the practice of obtaining right-of-way by means of dedication, or from state and federal entities, so that right-of-way is not included in the capital facilities plan.

[12] Section 5-8-5 NMSA

Table 26. Planned Road Capacity Expansion Projects

Project	Type	Length (feet)	# of Lanes Exist	# of Lanes Future	Construction Cost
CIP Projects (2010 to 2015)					
Del Rey Blvd - N. of Sandhill Arroyo	Prin. Art.	5,900	0	4	$2,471,742
Roadrunner Parkway - HWY 70 to Settlers Pass	Prin. Art.	3,500	0	4	$1,466,288
Sonoma Ranch Blvd - Lohman Ave to Dripping Springs Road	Prin. Art.	11,500	0	4	$4,817,803
Sonoma Ranch Blvd - Vista Belleza to City Limits	Prin. Art.	16,600	0	4	$6,954,394
Porter North of US 70 to Payan Rd	Prin. Art.	1,560	2	4	$326,773
Porter North - Payan Rd to Peachtree Hills Road	Prin. Art.	2,865	0	4	$1,200,261
Mesa Grande North of U.S. 70 to Cortez Ave	Prin. Art.	16,600	0	4	$6,954,394
Mesa Grande Drive - North of Mesa Central St to Calle Jitas	Prin. Art.	10,500	0	4	$4,398,864
Engler/Thurmond Rd - McGuffey to 270' E. of Calle Pico Gemelo	Prin. Art.	5,420	0	4	$2,270,652
Calle Jitas - Sonoma Ranch Blvd to Silver Hawk	Prin. Art.	4,610	2	4	$965,655
Calle Jitas - Prado Del Sol to Mesa Grande	Prin. Art.	1,100	0	4	$460,833
Missouri Ave - 225' W. of Candeleras St. to Sonoma Ranch Blvd	Minor Art.	5,100	0	4	$2,136,591
Master Transportation Plan Projects (2015 to 2020)					
Mesa Grande Drive - Calle Jitas to Lohman	Prin. Art.	8,250	0	4	$3,456,250
Engler Road - Del Rey Bvd to 460 ft W. of Kilbourne Hole Dr	Prin. Art.	1,470	0	4	$615,841
Engler Road - Kilbourne Hole Dr to 150' E. of Salado Creek St.	Prin. Art.	4,100	2	4	$307,920
Engler Road - Salado Creek St. to 270' E. of Calle Pico Gemelo	Prin. Art.	7,680	0	4	$3,217,455
Engler Road - Del Rey Bvd to 200' E of I-25	Prin. Art.	1,460	0	4	$611,652
Engler Road - El Camino Real to Elks	Prin. Art.	5,800	0	4	$2,429,848
Porter Road - Hwy 70 to Lohman Ave	Prin. Art.	22,278	0	4	$12,333,132
Sonora Springs - Sonoma Ranch Blvd to Weisner	Minor Art.	21,000	0	4	$10,733,333
Weisner Road - Hwy 70 to Dripping Springs	Prin. Art.	37,000	0	4	$17,733,333
Total		194,293			$85,863,014

Source: CIP projects (road name, type, length, number of lanes, new lanes and construction cost) are from the City of Las Cruces Public Works Department; master plan projects are from the Las Cruces Metropolitan Planning Organization; all road costs exclude arroyo-related construction costs.

STORMWATER DRAINAGE

This section addresses the calculation of the stormwater drainage impact fee. Impact-fee-eligible facilities are those that provide added capacity to meet demand from new development. As defined by the *Development Fees Act,* this includes "…stormwater, drainage and flood control facilities."[13] In this study, the drainage facilities included in the impact fee are the major arroyo crossings associated with City arterial roads. The fee does not include ponds and conveyance systems that are part of the regional flood control system. The drainage fee excludes the cost of land and site-specific facilities, which will be provided by private-sector interests. Like the road impact fee in this report, the stormwater drainage impact fee will be charged only in the City's growth area and is calculated using the same methodology. The drainage fee may be adopted as part of the major roads impact fee or as a separate drainage impact fee restricted to arterial arroyo crossings.

Service Unit

The *Act* requires that a standard measure of capital facilities demand – a "service unit" – be specified for each impact fee. Section 5-8-2.P, NMSA, defines "service unit" as:

> "…a measure of consumption, use, generation or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards for a particular category of capital improvements or facility expansions."

A common measure of capital facilities capacity demand is an "equivalent dwelling unit" (EDU), which expresses demand in terms of number of single-family equivalent units. A multi-family dwelling unit for example, might be shown to require ¾ of the capital facility capacity typical of a single-family unit. This means that multi-family demand is 0.75 EDUs.

Since the stormwater drainage facilities in this study are the bridge and arroyo crossing associated with arterial roads in the growth area, the EDU will be quantified in terms of relative travel demand. As a result, the drainage fee uses the same demand equivalency schedule used for the road impact fee (see Table 12 on page 18).

Current and Projected Service Units

Section 5-8-6.A(5), NMSA, requires that the IFCIP contain a projection of service units attributable to new development. Future service units are estimated based on residential and nonresidential projections for the growth area from the land use assumptions analysis and are the same as those used in the road impact fee calculation (see Table 13 on page 19). The total number of service units in the growth area is projected to grow an estimated 11,420 EDUs from 2010 to 2020.

Cost per Service Unit

Section 5-8-6.A(6), NMSA, requires that the IFCIP include a projection of capital improvements needed to meet demand from new development. The stormwater drainage impact fee in this update is designed to cover the arroyo cost associated with the planned arterial road projects. The cost of

[13] Section 5-8-2.D (1), NMSA

demand from new development is calculated as the product of arroyo cost per VMC, road LOS, VMT per service unit and number of new development service units. VMT per service unit is the rate for a single-family unit, which by definition is one EDU.

The stormwater drainage costs are based on the cost of arroyo crossings associated with City arterial roads. The planned arterial road projects and their related arroyo costs are derived from the City's 2010 to 2015 Capital Improvements Plan (CIP) and the 2015-2020 Master Transportation Plan. Arroyo costs are estimated by City staff, based on current economic conditions, and based on construction and other costs from recently completed projects. As shown in Table 27, arroyo crossings associated with the planned arterial roads will cost an estimated $32.0 million.

Table 27. Drainage Capital Facilities Cost

Project	Miles	Capacity Before	Capacity After	New VMC	Arroyo Cost
Del Rey Blvd - north of Sandhill Arroyo	1.12	na	26,800	30,016	$0
Roadrunner Parkway - HWY 70 to Settlers Pass	0.66	na	26,800	17,688	$2,000,000
Arroyo Crossing-Roadrunner Pkwy over Sand Hill Arroyo					
Porter North of US 70 to Payan Rd	0.30	12,600	26,800	8,040	$0
Porter North - Payan Rd to Peachtree Hills Road	0.54	na	26,800	14,472	$0
Mesa Grande North of U.S. 70 to Cortez Ave	3.14	na	26,800	84,152	$0
Mesa Grande Drive - North of Mesa Central St to Calle Jitas	1.99	na	26,800	53,332	$5,000,000
Arroyo Crossing - Mesa Grande over Alameda Arroyo					
Arroyo Crossing - Mesa Grande over Alameda Arroyo					
Arroyo Crossing - Mesa Grande over Alameda Arroyo					
Arroyo Crossing - Mesa Grande over Alameda Arroyo					
Sonoma Ranch Blvd - Vista Belleza to City Limits	3.14	na	26,800	84,152	$0
Sonoma Ranch Blvd -Lohman Ave to Dripping Springs Road	2.18	na	26,800	58,424	$5,000,000
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo					
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo					
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo					
Engler/Thurmond Rd - McGuffey to 270' E. of Calle Pico Gemelo	1.03	na	26,800	27,604	$0
Calle Jitas - Sonoma Ranch Blvd to Silver Hawk	0.87	12,600	26,800	23,316	$0
Calle Jitas - Prado Del Sol to Mesa Grande	0.21	na	26,800	5,628	$0
Missouri Ave - 225' W. of Candeleras St. to Sonoma Ranch Blvd	0.97	na	26,800	25,996	$0
Master Transportation Plan Projects					
Mesa Grande Drive - Calle Jitas to Lohman	1.56	na	26,800	41,808	$4,000,000
Arroyo Crossing - Mesa Grande over N. Fork Las Cruces Arroyo					
Arroyo Crossing - Mesa Grande over S. Fork Las Cruces Arroyo					
Engler Road - Del Rey Bvd to 460 ft W. of Kilbourne Hole Dr	0.28	na	26,800	7,504	$0
Engler Road - Kilbourne Hole Dr to 150' E. of Salado Creek St.	0.78	12,600	26,800	20,904	$0
Engler Road - Salado Creek St. to 270' E. of Calle Pico Gemelo	1.45	na	26,800	38,860	$0
Engler Road - Del Rey Bvd to 200' E of I-25	0.28	na	26,800	7,504	$0
Engler Road - El Camino Real to Elks	1.10	na	26,800	29,480	$1,000,000
Arroyo Crossing - Calle Abuelo over N. Fork Las Cruces Arroyo					
Porter Road South of US 70 to Lohman	4.22	na	26,800	113,096	$13,000,000
Arroyo Crossing - Porter Road over Alameda Arroyo					
Arroyo Crossing - Porter Road over Alameda Arroyo					
Arroyo Crossing - Porter Drive over Alameda Arroyo					
Arroyo Crossing -Porter Drive over Alameda Arroyo					
Arroyo Crossing - Porter Drive over N. Fork Las Cruces Arroyo					
Arroyo Crossing - Porter Road over S. Fork Las Cruces Arroyo					
Arroyo Crossing - Porter Drive over S. Fork Las Cruces Arroyo					
Arroyo Crossing - Porter Drive over S. Fork Las Cruces Arroyo					
Sonora Springs -Sonoma Ranch Blvd to Weisner	3.98	na	26,800	106,664	$0
Weisner Road - Hwy 70 to Dripping Springs	7.01	na	26,800	187,868	$2,000,000
Arroyo Crossing					
Total	36.81			986,508	$32,000,000

Source: Road projects, road length, number of lanes and associated arroyo cost from City of Las Cruces Public Works Department; master plan projects are from the Las Cruces Metropolitan Planning Organization; updated project list and cost provided by City of Las Cruces Public Works Department, October 7 and 22, 2010.

The arroyo costs related to planned arterial road projects are divided by the new VMC added by the planned arterial roads to determine the arroyo crossing cost per VMC. The total VMC includes projects without any planned arroyo crossings in order to develop a representative cost of arroyo

crossings for the arterial road system. As shown in Table 28, the cost per VMC of planned arroyo crossings is $32.

Table 28. Arroyo Crossing Cost per VMC

Arroyo Cost for Planned Arterial Road Projects	$32,000,000
÷ New VMC Added by Planned Arterial Roads	986,508
Arroyo Crossing Cost per VMC	**$32**

Source: Total arroyo crossing cost and VMC from Table 27.

The cost per vehicle-mile derived from the planned arroyo improvement project costs is multiplied by the road impact fee level of service to derive the cost per VMT. The assumed impact fee level of service is based on the one-to-one ratio used in the road impact fee calculation. The cost per service unit is derived by multiplying the cost per VMT by the VMT associated with a single-family EDU. As shown in Table 29, the drainage cost per service unit is $438 per EDU.

Table 29. Drainage Cost per Service Unit

Arroyo Crossing Cost per VMC	$32
x Assumed Impact Fee LOS (ratio of VMC/VMT)	1.00
Cost per VMT	$32
x VMT per EDU (Single-Family, Detached)	13.69
Cost per EDU	**$438**

Source: Arroyo cost per VMC from Table 27; LOS ratio from Table 15; VMT per EDU based on single-family average daily VMT per unit from Table 12.

Net Cost per Service Unit

In order to ensure that new development is not double-charged, the cost per service unit should be reduced by a revenue credit to take into account the present value of future taxes or fees that will be generated by new development and used to retire debt on existing facilities serving existing development. However, the City does not have any creditable outstanding debt on existing roadways or associated arroyo crossing drainage improvements. Some State and Federal funding is received by the City for road improvements, and some of these improvements may include arroyo crossing components. However, the portion of road funding allocable to arroyo construction is unknown, and the full credit for State and Federal funding was attributed to the road impact fee calculated in this study. As a result, the cost per service unit calculated in the previous section is the same as the net cost per service unit used in determining the potential drainage impact fee schedule.

Potential Impact Fee Schedule

The potential impact fees for stormwater drainage are shown in Table 30. The stormwater drainage impact fee calculated in this report may be adopted as a separate fee or combined with the major roads impact fee.

Table 30. Potential Drainage Impact Fee Schedule

Land Use Type	Unit	EDU/ Unit	Net Cost/ EDU	Net Cost/ Unit
Single-Family Detached (Average)	Dwelling	1.00	$438	$438
Single-Family (Variable Rate Option)				
< 1,500 sf	Dwelling	0.92	$438	$403
1,500-2,499 sf	Dwelling	1.00	$438	$438
2,500 + sf	Dwelling	1.10	$438	$482
Multi-Family	Dwelling	0.62	$438	$272
Hotel/Motel	Room	0.60	$438	$263
Commercial/Retail	1000 sq ft	1.46	$438	$639
Office	1000 sq ft	0.92	$438	$403
Institutional	1000 sq ft	0.63	$438	$276
Industrial	1000 sq ft	0.70	$438	$307
Warehouse	1000 sq ft	0.36	$438	$158
Mini-Warehouse	1000 sq ft	0.25	$438	$110

Source: EDUs per unit from Table 12; net cost per service based on cost per service unit from Table 30.

Table 31 shows potential total revenue over the next 10 years, assuming that impact fees are assessed at the maximum potential fee calculated in this study, and that growth occurs as projected in the *Land Use Assumptions*.

Table 31. Potential Drainage Impact Fee Revenue, 2010 to 2020

New EDUs, 2010 to 2020	11,446
x Net Cost per Service Unit	$438
Potential Impact Fee Revenue	$5,013,348
÷ Years	10
Annual Average Impact Fee Revenue	$501,335

Source: New growth area service units from Table 13; net cost per service unit from Table 30.

Capital Facilities Plan

City transportation engineers and MPO planners have defined a list of planned road capacity expansion projects and the related arroyo crossings in the growth area, as shown in Table 32. The value of the planned arroyo crossing projects is $32.0 million, compared to projected total impact fee revenue of $5.0 million. The timeframe and funding for each project are as recommended by City staff, but are not definitive – specific projects will be selected for construction at specific times by means of a process of review and approval, by the City Council.

Table 32. Planned Drainage Projects

Project	Arroyo Cost
Roadrunner Parkway - HWY 70 to Settlers Pass	
Arroyo Crossing-Roadrunner Pkwy over Sand Hill Arroyo	$2,000,000
Mesa Grande Drive - North of Mesa Central St to Calle Jitas	
Arroyo Crossing - Mesa Grande over Alameda Arroyo	
Arroyo Crossing - Mesa Grande over Alameda Arroyo	$5,000,000
Arroyo Crossing - Mesa Grande over Alameda Arroyo	
Arroyo Crossing - Mesa Grande over Alameda Arroyo	
Sonoma Ranch Blvd -Lohman Ave to Dripping Springs Road	
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo	
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo	$5,000,000
Arroyo Crossing - Sonoma Ranch Blvd over Totugas Arroyo	
Master Transportation Plan Projects	
Mesa Grande Drive - Calle Jitas to Lohman	
Arroyo Crossing - Mesa Grande over N. Fork Las Cruces Arroyo	$4,000,000
Arroyo Crossing - Mesa Grande over S. Fork Las Cruces Arroyo	
Engler Road -El Camino Real to Elks	
Arroyo Crossing - Calle Abuelo over N. Fork Las Cruces Arroyo	$1,000,000
Porter Road South of US 70 to Lohman	
Arroyo Crossing - Porter Road over Alameda Arroyo	
Arroyo Crossing - Porter Road over Alameda Arroyo	
Arroyo Crossing - Porter Drive over Alameda Arroyo	
Arroyo Crossing -Porter Drive over Alameda Arroyo	$13,000,000
Arroyo Crossing - Porter Drive over N. Fork Las Cruces Arroyo	
Arroyo Crossing - Porter Road over S. Fork Las Cruces Arroyo	
Arroyo Crossing - Porter Drive over S. Fork Las Cruces Arroyo	
Arroyo Crossing - Porter Drive over S. Fork Las Cruces Arroyo	
Weisner Road - Hwy 70 to Dripping Springs	
Arroyo Crossing	$2,000,000
Total	$32,000,000

Source: CIP projects (road name and related arroyo construction cost) are from the City of Las Cruces Public Works Department and master plan projects are derived from planned projects provided by the Las Cruces Metropolitan Planning Organization.

PUBLIC SAFETY

This section calculates the public safety impact fee – the impact fee for police and fire department facilities. Impact-fee-eligible facilities are those that provide added capacity to meet demand from new development. As defined by the *Development Fees Act,* this includes "…buildings for fire, police and rescue, and essential equipment costing $10,000 or more and having a life expectancy of 10 years or more."[14]

Service Unit

The *Act* requires that a standard measure of capital facilities demand – a "service unit" – be specified for each impact fee. Section 5-8-2.P, NMSA, defines "service unit" as:

> "…a measure of consumption, use, generation or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards for a particular category of capital improvements or facility expansions."

A common measure of capital facilities capacity demand is an "equivalent dwelling unit" (EDU), which expresses demand in terms of number of single-family equivalent units. A multi-family dwelling unit, for example, might be shown to require ¾ of the capital facility capacity typical of a single-family unit. This means that a multi-family unit has a "service unit generation rate" of 0.75 EDUs (see Table 36).

A particular challenge for public safety demand analysis is to identify a unit of measure applicable to a variety of property types – a measure that can express demand for a shopping center in the same terms as for single-family.

Functional population (similar to full-time equivalent, or FTE, employees, but in this case FTE persons) is a measure that is often used. It is a good

[14] Section 5-8-2.D, NMSA

indicator of demand, because public safety demand is to a large extent driven by the presence and number of people, and the attendant demand for public safety services. Because functional population can be used to define occupancy for residential and all other property types, it presents a uniform, consistent and equitable measure.

There are alternatives to the use of functional population as a demand differentiation methodology. "Calls for service" is commonly used. This kind of analysis is based on a count of calls (sometimes including call duration and intensity) over a given period. The methodology is appealing because it provides a more intuitive demand measure, but it is labor-intensive, and supposes that records are available at a level of detail and in a format that will support the analysis. Often this is not the case. (Calls detailed at this level are not available for Las Cruces.) The methodology requires considerable estimation because calls are typically not logged in a way that matches impact fee property types, and because calls may be categorized differently by different staff members.

Because the data are utilized as a ratio (calls per unit), a call-based approach is a function of two separate datasets, which compounds the potential for error. In practice this means that a call-based demand index can, and often does, vary significantly over time. For these reasons, functional population was selected as the preferred methodology for this analysis.

Functional population is analogous to the concept of "full-time equivalent" employees. It represents the number of "full-time equivalent" people present at the site of a land use, and it is used for the purpose of determining the impact of a particular development on the need for facilities. For residential development, functional population is simply average household size times the percent of time people spend at home. For nonresidential development, functional population is based on a formula that factors trip generation rates, average vehicle occupancy and average number of hours spent by visitors at a land use.

Residential Functional Population

For residential land uses, the impact of a dwelling unit on the need for capital facilities is generally proportional to the number of persons residing in the dwelling unit. This can be measured for different housing types in terms of either average household size (average number of persons per occupied dwelling unit) or persons per unit (average number of persons per dwelling unit, including vacant as well as occupied units). In this analysis, average household size is used to develop the functional population multipliers, as it avoids the need to make assumptions about occupancy rates.

This study provides two options for assessing single-family impact fees: as an average for all single-family units and as a "variable rate" demand schedule that varies by unit square footage. The variable rate option shows lower demand for smaller homes, and as such may offer an advantage with respect to housing affordability. Either option can be used to assess the impact fee.

An important input into the impact fee calculations is the number of persons associated with the single-family and multi-family housing types. The best and most complete available data source on average household size in Las Cruces is the 2000 U.S. Census. As shown in Table 33, average household size is 2.72 persons per single-family unit and 1.98 persons per multi-family unit. The tiered average household size data is based on data presented in the road section (see Table 7).

Table 33. Average Household Size by Housing Type, 2000

Housing Type	Total Units	Vacant Units	Occupied Units	Household Population	Avg. HH Size
Single-Family Detached	20,804	1,198	19,606	53,278	2.72
Multi-Family	10,730	1,254	9,476	18,717	1.98

Source: U.S. Census Bureau, 2000 Census SF-3 (1-in-6 weighted sample data) for the City of Las Cruces.

Determining residential functional multipliers is considerably simpler than the nonresidential component. It is generally estimated that people spend one-half to two-thirds of their time at home and the rest of each 24-hour day away from their place of residence. In developing the residential component of 24-hour functional population, this study assumes 12 hours per day at home during weekdays and 20 hours per day on weekends. This yields a total of 100 hours at home, which is 60% of the 168 hours in a week. Residential functional population, shown in Table 34, is calculated as the product of household size and occupancy.

Table 34. Residential Functional Population

Property Type	Unit	Avg. HH Size	Occupancy Factor	Functional Pop./Unit
Single-Family (Flat Rate Option)				
Average	Dwelling	2.72	60%	1.63
Single-Family (Variable Rate Option)				
< 1,500 sf	Dwelling	2.50	60%	1.50
1,500-2,499 sf	Dwelling	2.71	60%	1.63
2,500 + sf	Dwelling	3.02	60%	1.81
Multi-Family	Unit	1.98	60%	1.19
Hotel/Motel	room	1.34	60%	0.80

Source: Single-family and multi-family average household size from Table 33; variable rate single-family household size from Table 7; hotel/motel room occupancy based on one-half of average vehicle occupancy on vacation trips from U.S. Department of Transportation, *National Household Travel Survey*, 2001.

Nonresidential Functional Population

The functional population methodology for nonresidential uses is based on trip generation data utilized in developing the travel demand schedule prepared for the road impact fee update. Functional population per 1,000 square feet is derived by dividing the total number of hours spent by employees and visitors during a weekday (24 hours). Employees are estimated to spend eight hours per day at their place of employment; and visitors are estimated to spend 1.0 hour per visit. The formula used to derive the nonresidential functional population estimates is summarized in Figure 4.

Figure 4. Nonresidential Functional Population Formula

Functional population/1000 sf = (employee hours/1000 sf + visitor hours/1000 sf) ÷ 24 hours/day

Where:

Employee hours/1000 sf = employees/1000 sf x 8 hours/day

Visitor hours/1000 sf = visitors/1000 sf x 1 hour/visit

Visitors/1000 sf = weekday ADT/1000 sf x avg. vehicle occupancy – employees/1000 sf

Weekday ADT/1000 sf = one way average daily trips (total trip ends ÷ 2)

Using this formula and information on trip generation rates used in this study for the road impact fee, vehicle occupancy rates from the *National Household Travel Survey* and other sources and assumptions, nonresidential functional population estimates per 1,000 square feet of gross floor area are calculated. Table 35 shows the nonresidential functional population calculation. The number of visitors is the product of total trips and number of persons per vehicle, reduced by the number of employees.

Table 35. Nonresidential Functional Population

Property Type	Unit of Measure	Trip Rate	Persons/ Trip	Employees/ Unit	Visitors/ Unit	Func. Pop/ Unit
Retail/Commercial	1000 sq. ft.	21.47	1.77	1.02	36.98	1.88
Office	1000 sq. ft.	5.51	1.14	2.31	3.97	0.93
Public/Institutional	1000 sq. ft.	3.79	1.63	0.91	5.27	0.52
Industrial	1000 sq. ft.	3.48	1.14	1.05	2.92	0.47
Warehouse	1000 sq. ft.	1.78	1.14	0.43	1.60	0.21
Mini-Warehouse	1000 sq. ft.	1.25	1.14	0.04	1.38	0.07

Source: Trip rates are one-half average daily trips from Institute of Transportation Engineers (ITE), *Trip Generation*, 8th Edition, 2008 (retail/commercial based on shopping center, public/institutional based on nursing home, industrial based on manufacturing); persons per trip is average vehicle occupancy from U.S. Department of Transportation, National *Household Travel Survey*, 2001; number of employees is derived from U.S. Department of Energy, *Commercial Buildings Energy Consumption Survey*, 2003 (mini warehouse based on ITE trip rates per employee); visitors per unit and functional population calculated based on formula in Figure 4.

Public Safety Equivalency

In Table 36, the service unit generation rate for a given property type is the quotient of functional population for that property type and the functional population for a typical single-family detached unit.

Table 36. Public Safety Equivalency Schedule

Property Type	Unit	Functional Population	EDUs/ Unit
Single-Family (Flat Rate Option)			
Average	Dwelling	1.63	1.00
Single-Family (Variable Rate Option)			
< 1,500 sf	Dwelling	1.50	0.92
1,500-2,499 sf	Dwelling	1.63	1.00
2,500 + sf	Dwelling	1.81	1.11
Multi-Family	Unit	1.19	0.73
Hotel/Motel	Room	0.80	0.49
Retail/Commercial	1000 sq. ft.	1.88	1.15
Office	1000 sq. ft.	0.93	0.57
Institutional	1000 sq. ft.	0.52	0.32
Industrial	1000 sq. ft.	0.47	0.29
Warehouse	1000 sq. ft.	0.21	0.13
Mini-Warehouse	1000 sq. ft.	0.07	0.04

Source: Residential functional population from Table 34; nonresidential functional population from Table 35.

Current and Projected Service Units

Section 5-8-6.A(5), NMSA, requires that the IFCIP contain a projection of service units attributable to new development. Table 37 shows current and projected city-wide service units for public safety capital facilities.

Table 37. Public Safety Service Units, 2010 to 2020

Property Type	Unit	EDUs/ Unit	2010 Units	2010 EDUs	2020 Units	2020 EDUs	New EDUs
Single-Family	Dwelling	1.00	30,315	30,315	37,109	37,109	6,794
Multi-Family	Dwelling	0.72	13,634	9,816	16,672	12,004	2,188
Hotel/Motel	Room	0.49	2,904	1,423	3,145	1,541	118
Retail	1000 sq. ft.	1.15	5,477	6,299	6,938	7,979	1,680
Office/Bank	1000 sq. ft.	0.57	4,349	2,479	5,486	3,127	648
Other/Institutional	1000 sq. ft.	0.32	2,624	840	3,334	1,067	227
Industrial	1000 sq. ft.	0.29	4,268	1,238	5,378	1,560	322
Total Service Units (EDUs)				52,410		64,387	11,977

Source: 2010 and 2020 units from Table 4; EDUs/unit from Table 36.

Cost per Service Unit

The public safety impact fees are designed to charge new development the cost of providing the same level of service that is provided to existing development. The current capital facilities inventory is shown in Table 38. Public safety facilities include the fire stations, police academy, police department and code enforcement buildings. Based on available building construction cost of $250 per square foot and land values from the City of Las Cruces, the replacement value of existing facilities is $26.5 million.

Table 38. Public Safety Facility Replacement Cost

Facility	Address	Building (sq. ft.)	Land (acres)	Building Value	Land Value	Total Value
Fire HQ/Station #1	201 E. Picacho	16,200	2.00	$4,050,000	$414,000	$4,464,000
Fire Station #2	1199 E. Foster Road	5,543	0.27	$1,385,750	$56,726	$1,442,476
Fire Station #3	399 N. Valley Dr.	5,527	0.81	$1,381,750	$166,775	$1,548,525
Fire Station #4	2803 E. Missouri	10,536	0.93	$2,634,000	$364,701	$2,998,701
Fire Station #5	5998 Bataan Mem. East	7,851	0.74	$1,962,750	$104,040	$2,066,790
Fire Station #6	2750 North Rise Dr	8,400	1.49	$2,100,000	$550,728	$2,650,728
Fire Station #7	8850 Zia Blvd.	1,600	0.15	$400,000	$6,375	$406,375
Police Academy	300 N. Hermosa	2,800	1.00	$700,000	$141,000	$841,000
Police Dept.	217 E. Picacho	31,780	4.10	$7,945,000	$848,700	$8,793,700
Codes Building	1095 S. Med Park Dr.	5,000	0.50	$1,250,000	$48,750	$1,298,750
Total		95,237	11.99	$23,809,250	$2,701,794	$26,511,044

Source: Buildings, square footage, site area, building cost are from Fire and Police Department planners; land cost from the City land manager.

The New Mexico *Development Fees Act* authorizes the use of impact fees for all essential public safety equipment costing $10,000 or more and having a life expectancy of at least ten years. As shown in Table 39, the replacement value for the existing public safety capital equipment is $8.7 million. All of the capital equipment is owned by the City, except for certain apparatus that were obtained by means of capital lease and state loan. Revenue credit for the principal balance on those contracts is calculated in the next section.

Table 39. Public Safety Capital Equipment

Equipment	Cost
Engine 1: Class A Pumper	$430,000
Truck 1: Aerial Platform	$850,000
Engine 2: Class A Pumper	$430,000
Engine 3: Class A Pumper	$430,000
Engine 4: Class A Pumper	$430,000
Truck 4: Aerial Platform	$850,000
Engine 5: Tanker/Pumper	$450,000
Engine 6: Class A Pumper	$430,000
Engine 7: Class A Pumper	$430,000
Reserve 1: Class A Pumper	$430,000
Reserve 2: Class A Pumper	$450,000
Reserve 3: Aerial Platform	$850,000
Haz Mat 4 Tow Unit: Tractor Trailer	$150,000
Haz Mat 4 Trailer: Cargo Trailer	$75,000
Decon Unit: Cargo Trailer	$50,000
Rescue 6: 66' Tractor Trailer	$125,000
Mobile Command Unit	$550,000
Aircraft Crash Management Unit	$650,000
Mobile Air Unit: Trailer	$50,000
Compressed Air Foam Unit: Truck	$125,000
Bearcat Armored Vehicle	$250,000
Mobile Operations Center	$80,000
Crime Scene Processing Unit	$114,000
Total	$8,679,000

Source: Fire and Police Department planning staff, November 24, 2010.

In this study, the total replacement value of buildings, land and capital equipment is divided by the building square feet to determine the total cost per square foot for public safety facilities. Note that non-building improvements that add service capacity are quantified and reflected in the cost. As shown in Table 40, the total cost for public safety facilities and equipment is $369 per square foot.

Table 40. Public Safety Cost per Square Foot

Land & Buildings	$26,511,044
Equipment (eligible)	$8,679,000
Total Replacement Cost	$35,190,044
÷ Building Area (sq. ft.)	95,237
Cost per Square Foot	**$369**

Source: Land and building replacement cost and building area from Table 38; equipment from Table 39.

As shown in Table 41, the public safety level of service is 1.82 square feet per service unit. The cost per service unit is derived by multiplying the level of service by the replacement cost per square foot. The total cost per service unit for public safety is $671 per EDU.

Table 41. Public Safety Cost per Service Unit

Public Safety Building Space (square feet)	95,237
÷ Total Service Units (EDUs), 2010	52,410
LOS (Square Feet per Service Unit)	1.82
x Cost per Square Foot	$369
Cost per Service Unit	**$671**

Source: Public safety building space from Table 38; 2010 service units from Table 37; cost per square foot from Table 40.

Section 5-8-6.A(6), NMSA, requires that the IFCIP include a projection of capital improvements needed to meet demand from new development. Table 42 shows that the cost to maintain the current service over the next ten years is $8.0 million.

Table 42. Projected Public Safety Improvement Costs

Cost per Service Unit (EDU)	$671
÷ Projected New Service Units (EDUs), 2010-2020	11,977
Cost to Meet Demand from New Development, 2010 to 2020	**$8,036,567**

Source: Cost per service unit from Table 41; new development service units from Table 37.

Net Cost per Service Unit

The total cost of capital facilities needed to meet demand from new development is quantified in the previous section. This section shows the calculation of net cost per service unit, which is less than total cost because of impact fee credits. The public safety impact fee is reduced by a credit for future capital lease and loan principal payments. (With respect to the calculation of impact fee credits, a capital lease is essentially the same as debt, in that the lease is amortized and title to the equipment transfers to the lessee at the end of the lease.)

The rationale underlying the need for credit (discussed in detail on page 10), is as follows:

- New development should not pay for a level of service higher than that provided existing development.

- New development should not pay more than its proportionate share of the cost of requisite new capacity (including consideration of payment of other fees or taxes).

- Credit may be appropriate for capital facility funding attributable to new development, or for future payments by new development to retire existing debt.

Evaluation of the need for impact fee credit is guided in part by interviews with staff to define current and expected future capital facilities funding practice. That review is summarized as follows.

- The City does not receive or anticipate "external funds" (grants and similar), earmarked for public safety capital facility capacity expansion.

- The Fire and Police Departments receive certain subsidies (State fire fund and other), along with a share of gross receipts tax revenue, which in both cases are earmarked for salary, and equipment of a type not eligible for impact fee assessment. This revenue is therefore not appropriate for impact fee credit.

- If impact fee eligible capital facilities identified in this IFCIP are obtained by means of exaction or contribution, impact fee credit is provide at the time the impact fee is assessed.

- The only public safety-related debt consists of capital leases and a State loan for fire vehicles, and a debt credit is calculated below.

A simple method that ensures that new development is not required to pay for existing facilities through property taxes or other funds used for debt retirement or capital lease payments, as well as new facilities and eligible equipment through impact fees, is to calculate the credit by dividing the outstanding debt by existing service units. Reducing the impact fee by this amount places new development on an equal footing with existing development in terms of the use of debt funding for improvements. Based on the outstanding public safety-related capital leases and state loans, the debt credit is $32 per service unit, as shown in Table 43.

Table 43. Public Safety Debt Credit

Outstanding Capital Lease Principal	$324,909
Outstanding State Equipment Loans Principal	$1,373,070
Total Outstanding Principal and Lease Payments	$1,697,979
÷ Existing Public Safety EDUs	52,410
Debt Credit per Service Unit (EDU)	**$32**

Source: Lease and loan principal payments from City accounting staff, February 17, 2007, updated to reflect outstanding lease and principal payments, August, 2010; total service units from Table 37.

Reducing the cost per service unit by the debt credit per service unit leaves a public safety net cost of $639 per service unit (EDU), as shown in Table 44.

Table 44. Public Safety Net Cost per Service Unit

Cost per Service Unit	$671
– Debt Credit per Service Unit	-$32
Net Cost per Service Unit (EDU)	**$639**

Source: Cost per EDU from Table 42; credit from Table 43.

Potential Impact Fee Schedule

The maximum potential public safety impact fees that can be adopted by the City of Las Cruces based on this study are derived by multiplying the EDUs associated with each land use type by the net cost per EDU as shown in Table 45. The potential impact fee schedule includes an option to charge variable impact fees for single-family units based on the unit size.

Table 45. Potential Public Safety Impact Fee Schedule

Property Type	Unit	EDUs/ Unit	Net Cost	Net Cost/ Unit
Single-Family (Flat Rate Option)				
Average	Dwelling	1.00	$639	$639
Single-Family (Variable Rate Option)				
< 1,500 sf	Dwelling	0.92	$639	$588
1,500-2,499 sf	Dwelling	1.00	$639	$639
2,500 + sf	Dwelling	1.11	$639	$709
Multi-Family	Unit	0.73	$639	$466
Hotel/Motel	Room	0.49	$639	$313
Retail/Commercial	1000 sq. ft.	1.15	$639	$735
Office	1000 sq. ft.	0.57	$639	$364
Institutional	1000 sq. ft.	0.32	$639	$204
Industrial	1000 sq. ft.	0.29	$639	$185
Warehouse	1000 sq. ft.	0.13	$639	$83
Mini-Warehouse	1000 sq. ft.	0.04	$639	$26

Source: EDUs per unit from Table 36; net cost per service unit from Table 44.

Table 46 shows potential total revenue over the next 10 years, assuming that impact fees are assessed at the proposed rate, and that growth occurs as projected in the *Land Use Assumptions*.

Table 46. Potential Public Safety Impact Fee Revenue

New EDUs, 2010 to 2020	11,977
Net Cost per Service Unit	$639
Potential Impact Fee Revenue	$7,653,303
÷ Years	10
Annual Average Impact Fee Revenue	$765,330

Source: New EDUs from Table 37; net cost per service unit from Table 44.

Capital Facilities Plan

The *Development Fees Act* requires that impact fees be used to fund facilities identified in the IFCIP that provide capacity needed to meet demand from new development.[15] Fire and police planners have defined a long range capital plan that shows potential new buildings and equipment. The plan is shown in Table 47. The timeframe and funding for each project are as recommended by planners, but are not definitive – specific projects will be selected for implementation at a specific time by means of an ongoing process of review and approval by the City Council.

The CIP shows that there are adequate projects planned to exhaust impact fee revenue expected to accrue during this planning period. The value of planned projects is $33.2 million, compared to projected total impact fee revenue of $7.7 million.

Table 47. Planned Public Safety Capital Expenditure Projects

Project	Year	Funding Source	Total Cost (excl. land)
Fire Station #7 and Fire/Police Training Facility Phase I*	FY12	Impact Fees & Bonds	$3,100,000
Fire Station #8 (Sonoma Ranch @ Northfork Arroyo)	FY14	Impact Fees and/or Bonds	$3,500,000
Fire Station #9 (Sierra Norte Annexation)	FY18	Impact Fees and/or Bonds	$4,500,000
Fire Station #10 (Vistas at Presidio I Annexation)	FY20	Impact Fees and/or Bonds	$4,500,000
Fire Apparatus Engine-7 (addition for Sta.#7)	FY12	Impact Fees and/or Bonds	$467,000
Fire Apparatus Engine-8 (addition for Sta. #8)	FY14	Impact Fees and/or Bonds	$475,000
Fire Apparatus Engine-9 (addition for Sta.#9)	FY18	Impact Fees and/or Bonds	$510,000
Fire Apparatus Squad/Truck-9 (addition for Sta. #5 or #9)	FY20	Impact Fees and/or Bonds	$1,100,000
Fire Apparatus Engine-10 (addition for Sta. #10)	FY20	Impact Fees and/or Bonds	$550,000
Answering Point Facility (MVRDA)/Traffic Control Center	FY12	Impact Fees, Other Sources**	$6,500,000
Police East Side Command	FY14	Impact Fees and/or Bonds	$4,000,000
Fire/Police Training Facility Phase II	FY15	Bond Cycling, Impact Fees	$2,000,000
Fire/Police Training Facility Phase III	FY18	Bond Cycling, Impact Fees	$2,000,000
Total			$33,202,000

*Station #7 is a relocation and improvement of an existing building and cost shown above is capacity expansion share of total cost based on ratio of net additional square feet (new facility square feet less existing facility square feet) to new facility square feet (77.5%).
** Countywide Tax, Bonds, Legislative Funding
Source: Fire and Police Department planners, September 14 and November 24, 2010.

[15] Section 5-8-5 NMSA

APPENDIX: MAJOR ROAD INVENTORY

Table 48. Arterial Road Inventory

Road	Segment	Ln.	Mi.	Capacity	Volume	VMC	VMT
Amador Ave	Valley to 17th	4	0.54	26,800	14,242	14,505	7,708
Amador Ave	17th to Westgate	4	0.40	26,800	11,746	10,634	4,661
Amador Ave	Westgate to Motel Blvd	4	0.31	26,800	9,797	8,238	3,011
Ave De Mesilla	Hickory to I-10	4	0.21	26,800	14,525	5,527	2,996
Ave De Mesilla	Valley to Hickory	4	0.18	26,800	23,702	4,785	4,232
Ave De Mesilla	I-10 to Motel Blvd	3	0.96	15,100	13,037	14,530	12,544
Del Rey Blvd	Mars to US 70	5	0.29	31,900	10,304	9,243	2,985
Del Rey Blvd	East 90-degree turn to Mars	2	1.60	12,600	3,497	20,183	5,602
Del Rey Blvd	S from La Rena St to E 90 deg	2	1.07	12,600	2,802	13,544	3,012
El Camino Real	Spitz to Main	2	0.29	12,600	3,900	3,711	1,149
El Camino Real	Carlton to Spitz	2	0.67	12,600	7,476	8,481	5,032
Elks Dr	Hatfield to Valley View	2	0.80	12,600	4,784	10,128	3,845
Elks Dr	South from Taylor Rd/Boyd	2	0.99	12,600	3,625	12,429	3,576
Elks Dr	Valley View to Main	5	1.07	31,900	15,414	34,158	16,505
Holman Rd	N.Main to Peachtree Hills Rd	2	0.45	12,600	6,663	5,651	2,988
Lohman Ave	McDonald's to Telshor	8	0.41	54,200	37,997	22,348	15,667
Lohman Ave	Walnut to McDonald's	6	0.23	40,600	37,997	9,175	8,587
Main St	Conway to Union	4	0.22	26,800	11,517	5,796	2,491
Main St	University to Conway	4	0.24	26,800	15,953	6,326	3,766
Main St	Valley to University	4	0.24	26,800	10,256	6,550	2,507
Main St	Watson to Union	2	0.52	12,600	17,290	6,603	9,060
Motel Blvd	Amador to I-10	4	0.20	26,800	24,445	5,332	4,864
Motel Blvd	Roadrunner Lane to Amador	4	0.23	26,800	12,826	6,094	2,916
Motel Blvd	W. Picacho to Roadrunner Lane	4	0.81	26,800	13,681	21,810	11,134
Porter Dr	Cortez to Aldrich	2	0.51	12,600	820	6,364	414
Porter Dr	US 70 to Cortez	2	0.15	12,600	1,914	1,888	287
Roadrunner Pkwy	Frontier(S.end) to Foothills	4	0.92	26,800	17,547	24,628	16,125
Roadrunner Pkwy	Main to Frontier(N.end)	4	2.23	26,800	7,578	59,633	16,862
Roadrunner Pkwy	Frontier(N.end) to Stagecoach	4	0.22	26,800	8,086	5,988	1,807
Roadrunner Pkwy	Stagecoach to Frontier(S.end)	4	0.14	26,800	9,227	3,879	1,335
Sonoma Ranch	N.Main to Jade	4	0.16	26,800	4,728	4,355	768
Spitz St	N. Main to Three Crosses	5	0.04	31,900	11,449	1,332	478
Spitz St	Three Crosses to El Camino Real	5	0.15	31,900	8,472	4,886	1,298
Telshor Blvd	Claude Dove to Missouri	4	0.21	26,800	24,180	5,622	5,073
Telshor Blvd	Missouri to Terrace	4	0.46	26,800	14,927	12,351	6,879
Telshor Blvd	Foothills to Mall	4	0.31	26,800	30,711	8,350	9,568
Telshor Blvd	Lohman to Foothills	4	0.24	26,800	26,430	6,429	6,340
Telshor Blvd	Idaho to Claude Dove	4	0.21	26,800	22,958	5,541	4,747
Telshor Blvd	Terrace to University	4	0.28	26,800	14,052	7,549	3,958
Telshor Blvd	Mall to Idaho	4	0.20	26,800	29,428	5,251	5,766
Union Ave	Main to Stern	5	0.27	31,900	18,487	8,705	5,045
Union Ave	Stern to College	5	0.31	31,900	19,647	9,911	6,104
Union Ave	College to University	5	0.14	31,900	24,615	4,601	3,551
University Av	Locust to El Paso ramp	4	0.43	26,800	26,840	11,437	11,454
University Ave	Espina to Solano	5	0.22	31,900	31,973	6,969	6,985
University Ave	Valley to El Paseo	5	0.38	31,900	17,108	11,968	6,419
University Ave	Solano to Locust	5	0.32	31,900	33,534	10,207	10,730

Table 48 Continued

Road	Segment	Ln.	Mi.	Capacity	Volume	VMC	VMT
University Ave	El Paseo to Espina	5	0.32	31,900	25,435	10,119	8,068
University Ave	Las Alturas to Telshor	4	1.15	26,800	21,895	30,947	25,283
University Ave	Main to Valley	4	0.14	26,800	7,368	3,822	1,051
University Ave	I-25 Bridge	4	0.26	26,800	27,821	7,101	7,372
Us 70	Mesa Grande to Porter	4	1.09	26,800	28,137	29,152	30,606
Valley Dr	Main to University	5	0.27	31,900	11,658	8,601	3,143
Valley Dr	Mayfield Lane to Hoagland	5	0.43	31,900	11,249	13,777	4,858
Valley Dr	Brown to Avenida de Mesilla	4	0.37	26,800	29,911	9,852	10,995
Valley Dr	Ave de Mesilla to Boutz	4	0.43	26,800	19,828	11,560	8,552
Valley Dr	Boutz to Main	4	0.67	26,800	13,066	17,981	8,766
Subtotal, Principal Arterial			26.57			636,537	381,525
Barker Rd	Stern to Valley	2	0.21	12,600	4,594	2,630	959
Foothills Rd	Nacho to Roadrunner	2	0.33	12,600	6,928	4,192	2,305
Foothills Rd	Telshor to Nacho	3	0.17	15,100	10,549	2,530	1,768
Lohman Ave	Roadrunner to Paseo de Onate	4	0.14	26,800	4,560	3,676	626
Lohman Ave	Paseo de Onate to Mt View Hosp	4	0.69	26,800	1,877	18,390	1,288
Motel Blvd	I-10 to Glass Rd (C-270)	4	0.43	26,800	5,275	11,496	2,263
Stern Dr	Union to Tortugas	2	0.74	12,600	6,502	9,298	4,798
Stern Dr	Tortugas to Salopek	2	0.31	12,600	5,695	3,925	1,774
Telshor Blvd	Main to Spruce	3	1.86	15,100	18,794	28,017	34,871
Telshor Blvd	Spruce to Lohman	2	1.12	12,600	16,446	14,117	18,426
Three Crosses Ave	Alameda to Spitz	3	0.34	15,100	11,712	5,188	4,024
Three Crosses Ave	Spitz to Main	1	0.09	6,000	3,639	535	325
Three Crosses Ave	Dalrymple to Alameda	2	0.56	12,600	7,724	7,003	4,293
Subtotal, Minor Arterial			6.98			110,997	77,720
Total, Arterial Roads			33.55			747,534	459,245

Source: Las Cruces MPO and city traffic engineer; road capacity from Table 14; VMC is the product of road capacity and miles; VMT is the product of volume and miles; the inventory shows the in-place road network located in the City of Las Cruces growth area, and excludes all major roads within the infill study area (south of Hoagland Rd./Three Crosses Ave/Alameda Blvd/N. Main St, east of Valley Drive, north of University Avenue; and west of I-25); trips are counted on a five-year cycle and 2009 volumes are estimated assuming 3% annual increase from the year of last count.