APPENDIX H – COSTS

H1. Data Sources

H1.1. 2006 SANDAG Land Ownership

Distribution: Open

Location:
http://www.sandag.cog.ca.us/resources/maps_and_gis/gis_downloads/land.asp

File Name: own.zip

Description: Publicly owned land boundaries, along with owner.

Fields: Owner.

Processing: Analyzed with ArcMap. Route analysis conducted for SPL and results put in Route_Analysis_SPL_1.1.xls[1].

H1.2. CDF Largest Fires

Distribution: Open

Location: http://www.fire.ca.gov/about_factsheets.php/20LSTRUCTURES05.pdf and http://www.fire.ca.gov/about_factsheets.php/20LACRES05.pdf

Description: Description of largest historical fires in terms of structures lost and acreage burned prior to 2005

Fields: Name & Cause, Start date, County, acres, structures destroyed, deaths

[1] Attached as RouteAnalysis_1.1.xls.

H1.3. Insurance Information Institute

Distribution: Open

Location: http://www.iii.org/media/facts/statsbyissue/wildfires/
also, quoted from Halsey[2].

Description: The Insurance Information Institute publishes information on insurance losses, including those due to wildland fire.

Fields: Date, Location (Fire name), Cost at time, Cost in 2006 dollars

H1.4. CDF Fire Perimeters

Distribution: Open

Location: http://frap.cdf.ca.gov/projects/fire_data/fire_perimeters/

Description: Comprehensive fire perimeter data.

Fields: Name, acres, agency, cause, year, month, day

Restrictions & Limitations: "include[s] timber fires 10 acres and greater in size, brush fires 50 acres and greater in size, grass fires 300 acres and greater in size, wildland fires destroying three or more structures, and wildland fires causing $300,000 or more in damage."
"The current fire perimeter layer developed by BLM, CDF, NPS and USFS is the most complete digital record of fire perimeters in California. However it is still incomplete in many respects. Fires may be missing altogether or have missing or incorrect attribute data. Some fires may be missing because historical records were lost or damaged, fires were too small for the minimum cutoffs, documentation was inadequate, or fire perimeters have not yet been incorporated into the database. Agencies are at different stages of participation. CDF and the USFS have completed inventory for the majority of their historical perimeters back to 1950, while only 2002 - 2003 fires are currently present for BLM."
"Some duplicates may still exist. Additionally, over-generalization, particularly with large old fires may show unburned "islands" within the final perimeter as burned. Users of the fire perimeter database must exercise caution in application of the data."

Processing: Analyzed with ArcView.

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[2] Halsey, Richard W; Fire, Chaparral, and Survival in Southern California; Sunbelt Publications; San Diego; 2005, p. 48

H1.5. RECON restoration estimate letter

Distribution: Open

Location: Attached[3]

RECON Restoration Estimate

Description: Estimated costs for restoring habitat disturbed by frequent fires or fires and human activities.

H1.6. MSCP Annual Reports

Distribution: Open

Location: http://dplu-mscp.sdcounty.ca.gov//RevisedAnnualReports.htm

Description: This site contains the annual reports for San Diego County's Multiple Species Conservation Program, which encourages the purchase and donation of designated habitat to mitigate for environmental damage that occurs as a result of development. The annual reports contain tables which describe all land purchases that the County made for the program in the previous year.

Fields: Area and property name, acres, date acquired, actual land cost, grant funds, general funds, south subarea, city of San Diego subarea, Chula Vista subarea.

Limitations: Reports are only available for 2000 and 2002-2005. However, all historical data is contained in the 2005 report.

H2. Analyses

H2.1. Wildland fires and property damage

H2.1.1. Goal

To illustrate the costs of property damage and fire suppression that result from catastrophic wildland fires.

[3] Attached as MGRA_Mbar_SPL_AppH_RECON_estimate.pdf

H2.1.2. Description

The Insurance Information Institute tallies the total losses of wildland fires throughout the United States.

H2.1.3. Methods

Following Halsey, the information was extracted from the III website, and is tallied in the table shown in the next section. The fraction that each fire contributes to the total included in the table, along with the cumulative percentage were also calculated.

H2.1.4. Analysis

The sixteen most expensive wildland fires in US history are tabulated below:

Date	Location	Cost at time ($million)	2006 Cost ($million)	% of top 16	% Cumulative
Oct. 20-21, 1991	Oakland, Alameda Counties, CA	$1,700.00	$2,516.30	36.15426	100
Oct. 25-Nov. 4, 2003	San Diego County, CA, "Cedar"	1,060.00	1,161.40	16.68702	63.84574
Oct. 25-Nov. 3, 2003	San Bernardino County, CA, "Old"	975	1,068.30	15.34936	47.15872
Nov. 2-3, 1993	Los Angeles County, CA	375	523.2	7.517349	31.80937
Oct. 27-28, 1993	Orange County, CA	350	488.3	7.015905	24.29202
Jun. 27-Jul. 2, 1990	Santa Barbara County, CA	265	408.8	5.873648	17.27611
May 10-16, 2000	Cerro Grande, NM	140	163.9	2.354919	11.40246
Jun. 23-28, 2002	Rodeo-Chediski Complex, AZ	120	134.5	1.932499	9.047544
Sep. 22-30, 1970	Oakland-Berkeley Hills, CA	24.8	128.9	1.852038	7.115045
Nov. 24-30, 1980	Los Angeles, San Bernardino, Orange, Riverside, San Diego Counties, CA	43	105.2	1.511516	5.263007

Jul. 26-27, 1977	Santa Barbara, Montecito, CA	20	66.5	0.955473	3.751491
May 17-20, 1985	Florida	33	61.8	0.887944	2.796017
Oct. 23-25, 1978	Los Angeles, Ventura Counties, CA	15	46.4	0.666676	1.908073
Nov. 16-17, 1980	Bradbury, Pacific Palisades, Malibu, Sunland, Carbon Canyon, Lake Elsinore, CA	16	39.1	0.56179	1.241397
Oct. 9-10, 1982	Los Angeles, Ventura, Orange Counties, CA	16	33.4	0.479892	0.679607
Sep. 12-18, 1979	Hollywood Hills, CA	5	13.9	0.199716	0.199716

Table H-1 – The sixteen most destructive fires in US history, according to the Insurance Information Institute. The total damage for all sixteen fires was roughly $7 billion in 2006 dollars. The percentage of this figure that each fire represents, both incrementally and cumulatively, are shown in the last two columns.

The cumulative losses are also shown in the figure below:

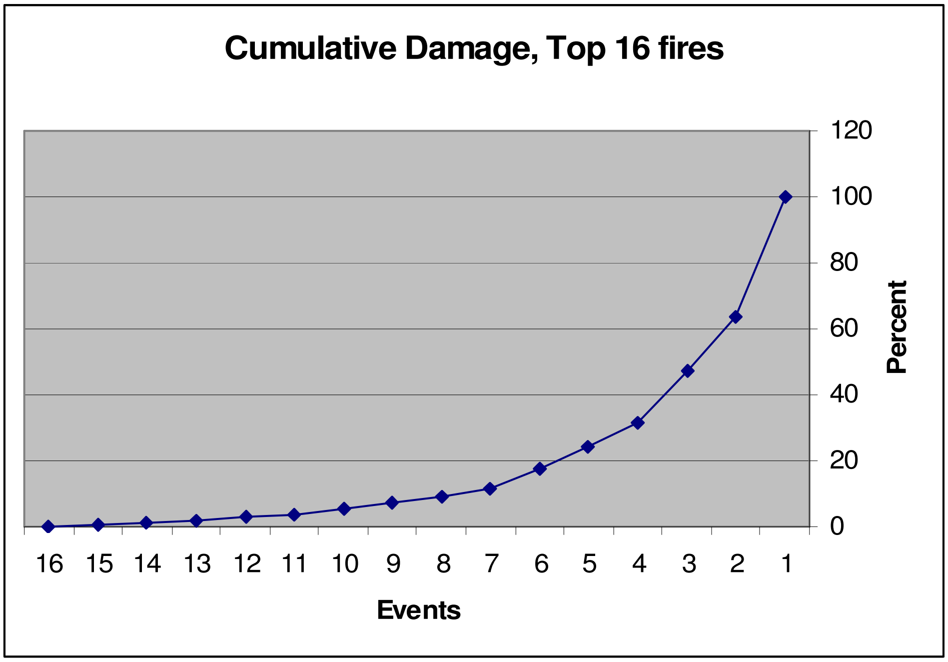

Figure H-1 – Figure shows the top 16 US wildland fires as measured by cost. The cumulative fraction that each fire and all smaller fires represent is plotted in this figure. It can be seen that over half of the damage was caused by the two largest fires.

This graph is extraordinarily steep, with a few large fires causing most of the cost. In fact, only the two largest fires are responsible for over half of the damage. One amazing fact, evident in the table above, is that this steepness is *scale invariant*. In other words, this same relationship between large and small events persists throughout the data sample. This is most clearly illustrated by the following fact: *the sum of the cost of any two fires that are adjacent in*

Table H-1 *will be the same as or larger than the sum of all smaller fires in the table.* This type of behavior is typical of power-law relationships that arise out of complexity theories such as 'self-organized criticality' and 'highly-optimized tolerance' that have been applied to wildland fires[4].

This type of statistical behavior has important economic and actuarial implications. It means that the most extreme events, though very rare, must be factored into the economic analysis of wildland fire, because their costs rise more steeply than their probability falls. There is usually a cut-off value for maximum loss for this type of behavior, which depends on system size, but it is not clear whether this has yet been reached. In the Cedar fire for instance, only a sudden change in wind direction,

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[4] See discussion in Appendix C.

accompanied by extreme firefighting effort, prevented the head of the fire from following the coastal canyons into the high-value community of La Jolla, which would have further multiplied losses.

One way to address these costs as applied to the SPL is to calculate the 'reasonable' insurance premium that would effectively cover these damages. This can be determined by multiplying the probability of the catastrophic event by its cost, and then amortizing over the lifetime of the project. Note that this is simply illustrative of the method that should be used to estimate cost/benefit impacts of the SPL, and a full estimate using proper actuarial techniques should be performed in the EIR. It has been calculated in Appendix F that there would be a 42% chance (uncertainty in recurrence period is a factor of 10-15X) of a fire larger than 100 acres being ignited by the line. What is the chance that one of these fires would become catastrophic? Figure F-4[5] has only a few points to judge from, but these appear to have a flat distribution on a logarithmic scale. Even if the Cedar fire is considered an 'outlier', and removed from the sample, other large fires capable of causing significant damage remain. The statistics, however, are limited, so we need to examine a range of assumptions regarding probability to calculate costs.

We can estimate that a 'major' catastrophic fire would accrue $1 B in damages to the citizens of the county. If found liable, SDG&E could also face double or triple damages due to the theories of trespass or inverse condemnation discussed in Appendix G, thus exposing it and its ratepayers to $3 B in damages.

Damages	Probability	Cost/yr	Liability	Cost/yr
$1 000 M	10%	$ 2.5 M	$ 3 000 M	$ 7.5 M
$1 000 M	2%	$ 0.5 M	$3 000 M	$ 1.5 M

Table H-2 – This table presents a range of property damages, liabilities, and probabilities that could be expected due to induced wildland fire from the SPL over a 40 year period. The Cost/yr shows the amortized cost of the event over the lifetime of the line. The 10% value is closer to what has been measured, while the 2% assumes that the Cedar fire was an improbable outlier.

These estimates are shown in the table above. A value of 10% would be consistent with the data in Figure F-4, since one of these events was the Cedar fire. If the Cedar fire is an outlier, then a smaller value could be appropriate. We show the values for a 2% probability.

[5] Appendix F, p. 14

H2.1.5. Limitations

Sixteen fires is a very limited sample, and it would be good to have a larger sample to see how far down the power-law relationship for cost persists in the data.

The increase in population of San Diego County over the next 40 years will likely place many more high-value structures in the wildland-urban interface, thus increasing exposure to losses. Conversely, improvements in home protection techniques and technologies may reduce losses.

Uncertainties in these calculations are large, which could mean that cost/year could be significantly greater or smaller than shown above.

Note that this is simply illustrative of the method that should be used to estimate cost/benefit impacts of the SPL, and a full estimate using proper actuarial techniques should be performed in the EIR.

H2.1.6. Conclusions

For the calculation of wildland fire losses, "the catastrophic is typical[6]". In other words, large rare events drive the overall economics of loss, because their costs rise more steeply than their probability falls. Typical 'worst case' events in California have caused property losses of $1 – 2 billion, and the statistical behavior of property losses argues that these major events should be used to estimate potential economic impacts. Calculating an 'insurance premium' by multiplying probability of loss by amount of loss, then amortizing it over the lifetime of the project gives a value that could and should be included in economic projections for the project. Using a reasonable range of assumptions, this premium would add $1.5 – 7.5 million per year to the cost of the project.

H2.2. Type Conversion

H2.2.1. Goal

To establish that damage to preserved lands by fires originating by the line may require rehabilitation, and to establish what the costs associated with this rehabilitation are likely to be.

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[6] Mitchell, Joseph W.; Brand Dilution; Wildfire Magazine, May, 2005; http://wildfiremag.com/wui/brand_dilution/

H2.2.2. Description

This section first establishes 'type conversion' as a potential threat to recently burned areas. It then uses CDF fire history data to determine what areas would be most at risk.

H2.2.3. Methods

First, this section reviews the nature of type conversion. Then it analyzes CDF fire history data in order to determine which segments of both the SPL and SWPL lines occur adjacent to recently burned areas which would be at risk for type conversion. These are then compared through the route analysis method.

H2.2.4. Analysis

Type conversion is the replacement of native chaparral by non-native weedy vegetation. While chaparral is fire-adapted, in the aftermath of a fire its regeneration is somewhat vulnerable, particularly if the land is disturbed. One of the disturbances that can lead to type conversion is another fire that occurs too soon (10-20 years) after the original fire. The invasive weeds tend to be "flashy" fuels, that increase fire risk through having a longer "dry" season and having characteristics that cause rapid fire spread. A good review of this phenomenon citing the major sources is given by Halsey[7]. A more recent work by Moritz, et al.[8] simulated plant community changes using the HFIRE computer program and found that type conversion created a positive-feedback loop in which the invasive weeds created more frequent fires, which in turn damaged chaparral communities and led to further spread of the invasive species. <u>This phenomenon, and the potential impact of SPL on type conversion should be handled in greater detail in the EIR.</u>

Areas in San Diego County that have recently burned will be at risk for type conversion until their chaparral communities stabilize, a period of about 10 to 20 years. In particular, areas near potential ignition sources such as the SPL or SWPL will be at greater risk. These areas, and the date ranges in which they burned, are shown in the figure below:

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[7] Halsey, p. 25

[8] Moritz, Max A., et. al; Wildfires, complexity, and highly optimized tolerance; Procedings of the National Academy of Sciences of the United States of America; December 13, 2005; vol. 102; 17913

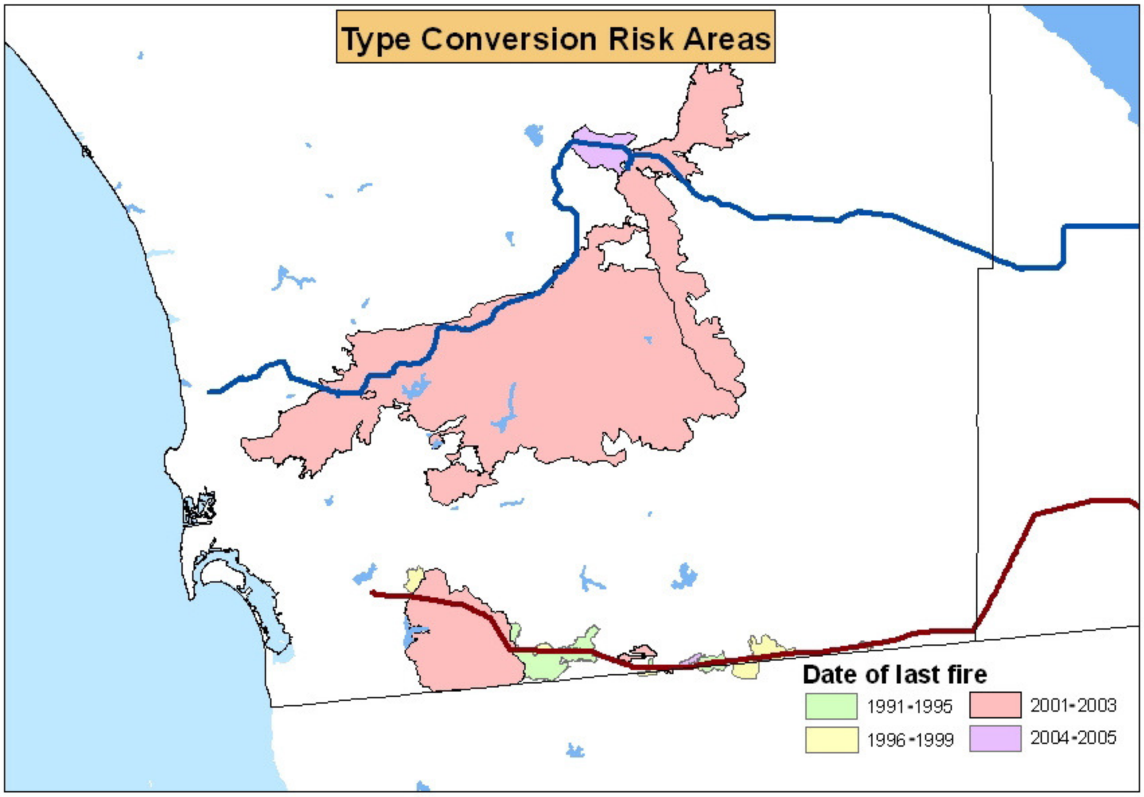


Figure H-2 – Recently burned areas in San Diego county adjacent to either the proposed SPL route or the SWPL route. Type conversion risk lasts for 10-20 years after the most recent fire.

As is evident, the proposed SPL route follows the route of the Cedar fire through a considerable portion of its path. This and the fire-affected regions would be at risk of type conversion should there be a fire induced by the SPL. The threatened areas are tallied in the RouteAnalysis_v1.1.xls file attached to Appendix C. These were added to a separate tab called TypeConv. The results are shown in the table below:

Date last fire	SPL(km)	SWPL(km)
1991-1995	0	10
1996-2000	0	16
2001-2003	57	24
2004-2005	13	5
Total	70	55

Table H-3 – Kilometers of line at risk for type conversion along the SWPL and proposed SPL routes.

If we include only line segments west of which we begin to get significant flammable vegetation, (at km 138 for SPL proposed; km 45 for SWPL), this implies that 70/105 or 67% of the SPL route that is at risk of ignition is also at risk for type conversion, as opposed to 55/90 or 61% for the SWPL route.

Should SDG&E be found liable for damages, they could be required to restore any public lands which to their original condition, or alternatively they could be required to mitigate through the purchase of equivalent land still containing viable habitat. This is another potential economic impact on the project. The next section shows that a considerable portion of the SPL route is adjacent to public lands which could be threatened. The subsequent sections describe the costs of restoration and mitigation.

H2.2.5. Limitations

The pattern of recent fire footprints will change with time as burned chaparral matures and fires burn new areas. Hence, the problem of type conversion will persist for the duration of operation of the proposed SPL and any other power lines traversing chaparral communities.

H2.2.6. Conclusions

Significant portions of the proposed SPL route pass through areas that have been burned in recent fires. This puts them at risk for type conversion, which would cause the loss of native habitat and increase fire risk, if a second fire follows too closely after the first. Because power lines present an ignition hazard, the presence of another line in this sensitive region increases the risk of type conversion until the chaparral community has a chance to fully stabilize. Seventy km of the proposed SPL route and 55 km of the existing SWPL route are currently under such a threat. Because SDG&E is liable for damages occurring to public lands, they may need to replace or restore lands lost to type conversion, thus adding to the cost of the project. These costs should be factored into the price of the project. This issue needs to be fully explored in the EIR.

H2.3. Public Land Adjacency

H2.3.1. Goal

To illustrate the extent of the interface between the proposed SPL route and public lands.

H2.3.2. Description

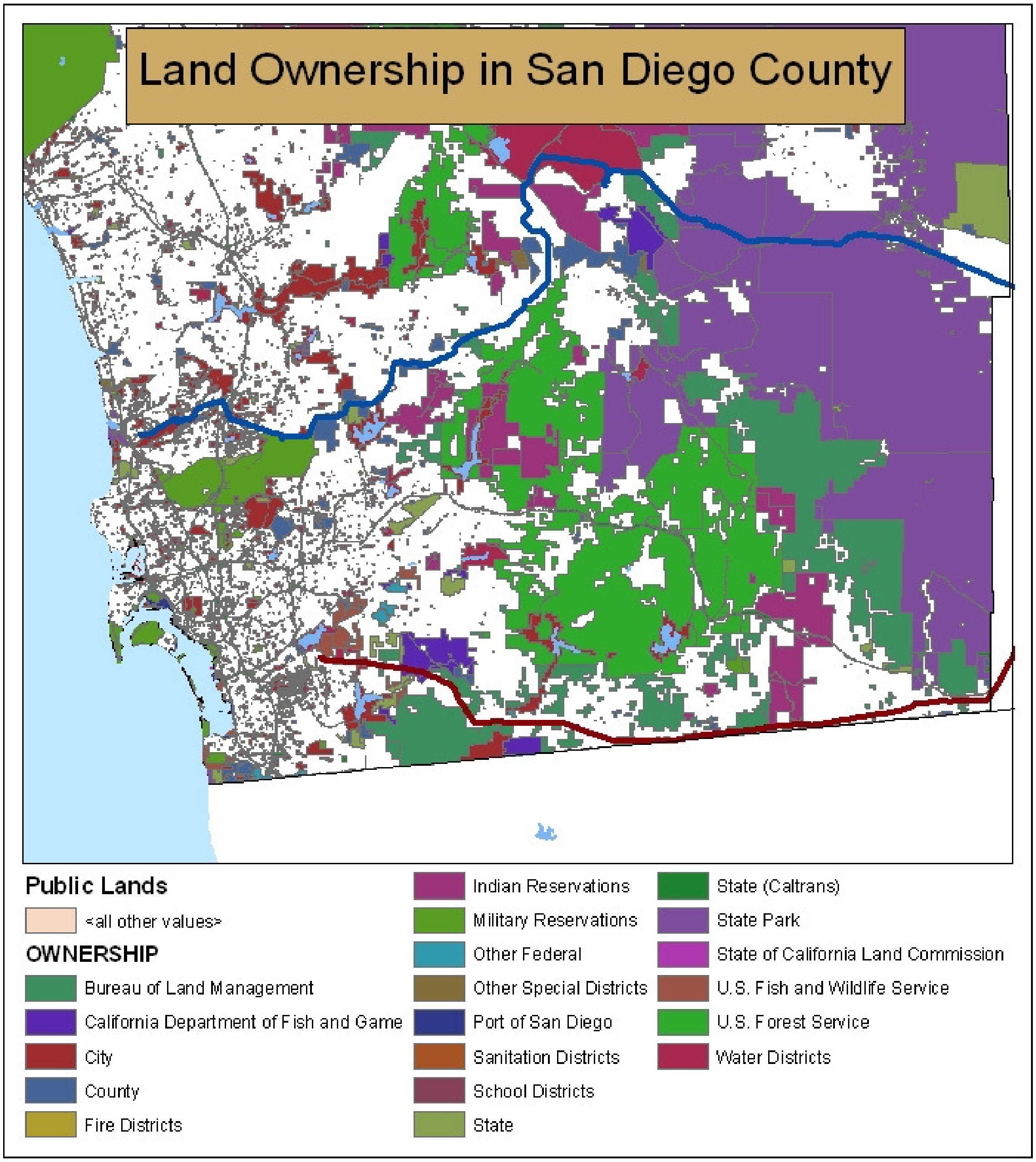
A considerable fraction of the proposed route for the Sunrise Powerlink is either through or adjacent to public lands. Not only does it impact other uses of these lands, it also exposes public land to the threat of wildland fire ignition. These public lands are mostly kept in a natural state, meaning that they may contain vegetation which will serve as fuel for wildland fire, as was the case in the 2003 fires. The SPL, as seen in previous appendices, presents a potential ignition source. These lands can be damaged by wildland fire, resulting in the loss of habitat through type conversion. Not only does this represent a direct cost to the public, but if the public agencies who own the land recover multiple damages from SDG&E, some or all of these costs may be passed on to the ratepayers.

H2.3.3. Methods

Data from SANDAG identifying the type of land owner was downloaded from the SANDAG website and cross-referenced with the proposed path of the SPL using GIS software. This was included in the route analysis *Route_Analysis_SPL_v1.1.xls*, in which ownership of lands bisected by or adjacent to the proposed SPL and actual SWPL routes were listed on a per-kilometer basis. Adjacency is sufficient for impact, since fires will often spread onto surrounding lands. Furthermore, visual impacts will also affect adjacent lands. These are shown in Column F of the analysis. The total path length affected was summed.

H2.3.4. Analysis

The land usage in San Diego County is shown in the figure below:



The total path length of the proposed SPL route adjacent to or through public lands is 100 km, or roughly 41% of its total path, as opposed to 35 km for SWPL. We also calculate the length of these segments west of where the region of significantly flammable vegetation begins (km 138 for SPL proposed; km 45 for SWPL). These give 62 km for SPL and 35 km for SWPL of path adjacent to public property. This implies that 59% of the SPL path at risk for fire is adjacent to public lands. Public lands affected by the preferred route are owned by the City of San Diego, the County of San Diego, and the BLM, and include the Mt. Gower Open Space preserve, the Los Penasquitos Canyon

Prserve, the Boulder Oaks Open Space preserve, the Sycamore Canyon Preserve, Mt. Gower Open Space preserve, among many others. Alternative routes have similar impacts on these and other preserves.

H2.3.5. Limitations

Public lands will be at risk of exposure to power line wildland fires even if they are far removed from the ignition source, due to the tendency of catastrophic wildland fires in San Diego County to spread rapidly westward. This analysis, while it illustrates the considerable exposure of public lands to wildland fire threat, does not describe the full extent of the risk.

This analysis applies only to San Diego County, and not to Imperial County.

The SWPL route is included for purpose of comparison only.

H2.3.6. Conclusions

The route proposed for SPL passes through or is adjacent to public lands in San Diego County over 41% of its total length. Including only the area at risk for fire, this fraction increases to 59%. This implies that public lands will be at risk for any fires induced by this line, and likewise that SDG&E could be exposed to liability and damages requested by governmental entities in the event such a fire occurs.

H2.4. Restoration Costs

H2.4.1. Goal

To determine the cost of restoring damaged habitat under threat of type conversion back to its original state.

H2.4.2. Description

This section uses estimates of restoration costs per acre to calculate the cost of restoring a chaparral community back to its original state. This may be necessary in the case where a fire follows too closely on another and there is a threat of type conversion.

H2.4.3. Methods

RECON, a company that conducts this type of activity was engaged, and a letter stating costs procured. This is attached in Section H1.5.

H2.4.4. Analysis

Two types of restoration are discussed in the attached letter: active restoration and passive management. Passive management consists of regular weeding in the damaged lands until the risk of type conversion is past, a process taking up to ten years. This costs $5-6,000 per acre per year. Active restoration is a faster process involving planting and watering, and costs roughly $42,000 per acre for a five year period. These prices do not include monitoring costs.

Due to the adjacency to public lands described in the previous section, the probability that a fire will escape onto San Diego County public lands is 59%. The fraction of land along the proposed route vulnerable to both ignition and type conversion for the next 20 years is 67%. Even as the 2003 fire scars heal, new ones will take their place, as indicated in the SWPL fire data, though we might reasonably expect the total exposed fraction to reduce due to the historically large nature of the 2003 fires. We shall use 50% as the minimum fraction for the period after 2025. <u>The EIR should study the average historical exposure to type conversion by looking at fire history throughout the County and determining what the probability has been historically that any given location has had a fire within the last 20 years.</u>

Should a fire occur due to a power line fault, SDG&E could be required to pay the costs of restoring the land back to its original condition, particularly if the land contains rare or irreplaceable habitat. Otherwise, mitigation through land purchase and donation could be a more cost-effective remedy, and this is discussed in the following two sections. However, as time passes, intact large parcels containing healthy wildlands will become rarer, and one would expect market forces to significantly increase their future cost. Restoration, then, provides a ceiling on the cost of remedy that a party responsible for starting a wildland fire could expect to provide. Once again, double or triple damages might also be assessed under the theory of trespass or inverse condemnation.

We can now apply an actuarial method similar to that in H2.1. Many preserves are in the 1,000 acre range (see H2.6). We will use 1000 acres as a median value. We assume that a passive management strategy is used, at a total cost of $50,000 per acre, meaning a full restoration cost of $50 million. Assuming a recurrence rate of 42 years, we get for the first 15 and last 25 years a 30% and 45% chance, respectively, of yielding a significant fire.

For the first 15 years of line operation we get:

30% probability * 1,000 acres * $50k/acre * 59% pub lands * 67% type conv * 3X damages = $ 21.3 M

For the period from 2025 to 2050,

45% probability * 1,000 acres * $50k/acre * 59% pub lands
* 50% type conv * 3X damages = $ 19.9 M

Total for the 40-year life of the SPL would then be $40.9million, which amortized would be a cost of $1.0 M/year. This would be the cost of the minimum insurance premium to safeguard against this contingency. While this represents a 'ceiling' for costs as far as reparations per acre, it does NOT properly characterize the extent of possible damages if a catastrophic fire were to damage multiple large preserves. <u>This should be fully analyzed in the EIR.</u>

H2.4.5. Limitations

Fractions of land at risk for type conversion will change with time as chaparral communities stabilize and as new fires occur, putting new areas at risk.

Some of the assumptions that went into the actuarial calculation can reasonably be replaced with others. For one, restoration is currently far more expensive than replacement, and if this continues to be so then replacement of damaged preserves may be used as a remedy. This will be explored in subsequent sections. The 1,000 acre canonical value is a geometric mean between the 100 acre threshold for a 'major' fire and a 10,000 acre maximum. However, fire sizes can become much larger than 10,000 acres, and might damage multiple preserves. Also, the 50% value for type conversion threat fraction for 2025-2050 is not based on hard figures. The EIR should study the average historical exposure to type conversion by looking at fire history throughout the San Diego and Imperial counties and determining what the probability has been historically that any given location has had a fire within the last 20 years. Also, the fraction of preserves that harbor critical habitat that is not easily replaceable through a land exchange should also be addressed in the EIR, since these would be more likely to require restoration.

H2.4.6. Conclusions

Restoration costs per acre of land range from $42,000 to $60,000 depending upon the method used. Based upon these quoted values for restoration costs, we have calculated likely damages of $48 million for the 40 year life of the project. The assumptions underlying this figure need to be carefully examined in the EIR.

H2.5. Cost of land parcels in San Diego County

H2.5.1. Goal

To indicate the current price of purchasing large land parcels as mitigation.

H2.5.2. Description

MLS (Multiple Listing Service) client data was obtained from a real estate agent, which shows all properties larger than 300 acres sold since 11/26/2001.

H2.5.3. Methods

MLS data authorized for public distribution was obtained from a real estate agent. Sold parcels between 11/26/2001 and 5/25/2007 that were larger than 300 acres were selected and input into an Excel spreadsheet, attached below:

MLS_3_2001_11_26.
xls

File H-1 – Multiple listing service data for all properties larger than 300 acres between Nov. 26, 2001 and May 25, 2007[9].

The price per acre was calculated. Some of these prices were very low, and it is assumed that these were either a mistake or a financial construction between buyer and seller. These outliers were removed from the sample, and the average calculated.

H2.5.4. Analysis

There were 23 recorded sales listed in the database of parcels more than 300 acres during the period specified. Some of the per-acre prices were too low to be considered legitimate for these calculations, and these were removed from the sample by requiring a price of greater than $500 per acre. Once this was done, the purchase price per acre ranged from $828 to $7,100. The average price is $2,565.11 per acre.

H2.5.5. Limitations

Selected records only go back to late 2001. Also, there was a real estate bubble through the 2001-2006 period, and it is not clear how this can be projected to future prices. Private sales not registered through the MLS are not included.

Estimating how much mitigation land would cost in the future is difficult. We should anticipate that as population grows, land prices overall will increase. Also, as

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[9] Attached as MLS_3_2001_11_26.xls

more land is developed, land suitable for mitigation will become harder to find and market forces will tend to increase its value.

H2.5.6. Conclusions

Between late 2001 and the present (May, 2007), the average price per acre for large (300+) parcels is $2,565.11. While this is currently less than the price for rehabilitation of damage lands, we can anticipate that market forces will drive these values closer over time.

H2.6. Cost of public lands purchased by San Diego

H2.6.1. Goal

To find the cost of large land purchases that might be representative of mitigation necessary if habitat preserved in public lands is lost due to type conversion caused by wildland fire.

H2.6.2. Description

We use San Diego County's records for the Multiple Species Conservation Plan (MSCP) to estimate purchase costs for large land parcels.

H2.6.3. Methods

Annual reports for the MSCP were downloaded (Section H1.6). Purchases larger than 300 acres were recorded below. Purchase of riparian habitats was not included, since these tend to be higher value.

H2.6.4. Analysis

Only three major purchases of comparable chaparral habitat were made since 2000, and these are listed in the table below:

Name and Location	Acres	Purchase Date	Cost	Cost/Acre
Hollenbeck Canyon, Daley Ranch, Ph I	312.5	9/7/2000	$2,000,000.00	$6,400.00
Iron Mountain, Boulder Oaks	1,215.00	9/26/2003	$4,410,000.00	$3,629.63
Iron Mountain, Ramona Serena/ Barnett Ranch	716.5	1/25/2002	$4,440,000.00	$6,196.79

Table H-4 – Purchases made under San Diego County's MSCP program of parcels greater than 300 acres containing chaparral habitat.

It should be noted that the proposed SPL route transects the Boulder Oaks preserve.

It should also be clear, when we compare these values with the $2,500 average cost per acre for purchases shown in Section H2.5.4, that the cost of prime habitat will tend to be higher. This trend should be expected to continue as development continues and habitat becomes rarer.

These values are still small compared to the $40-60k/acre required for restoration. Therefore, land purchase and replacement would be the most likely strategy employed in the near future to compensate for habitat loss due to type conversion. This would reduce the costs calculated in Section H2.4.4 by roughly a factor of ten. This cannot be assumed to be true in the medium to long term, however, and the EIR should determine whether key habitat near the route is even replaceable.

H2.6.5. Limitations

This is an extremely small data set, and may not be indicative of all preserve purchase prices.

Estimating how much mitigation land would cost in the future is difficult. We should anticipate that as population grows, land prices overall will increase. Also, as more land is developed, land suitable for mitigation will become harder to find and market forces will tend to increase its value.

H2.6.6. Conclusions

Three purchases of large parcels containing chaparral habitat were made by San Diego County under the MSCP program between 2000 and 2005. The price paid per acre ranges from $3,600 to $6,400. Since this is a factor of ten less in cost than restoration, it is likely that land purchase would be the short-term strategy for mitigating any habitat loss due to power line fires and type conversion. However, it should be expected that costs may increase, even up to the ceiling value set by restoration costs, as viable habitat becomes rarer.