DOCKETED

Docket Number:	15-RETI-02
Project Title:	Renewable Energy Transmission Initiative 2.0
TN #:	210296
Document Title:	Alliance For Desert Preservation Comments: Renewable Energy Transmission Initiative 2.0
Description:	N/A
Filer:	System
Organization:	Alliance For Desert Preservation
Submitter Role:	Public
Submission Date:	2/12/2016 2:06:00 PM
Docketed Date:	2/12/2016

Comment Received From: Alliance For Desert Preservation
Submitted On: 2/12/2016
Docket Number: 15-RETI-02

Renewable Energy Transmission Initiative 2.0

Additional submitted attachment is included below.

February 12, 2016

Chairman Robert B. Weisenmiller
California Energy Commission
1516 Ninth St.
Sacramento, Calif. 95814

President Michael Picker
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, Calif. 94102

Efiled at https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=15-RETI-02

Re: Renewable Energy Transmission Initiative 2.0

Dear Chairman Weisenmiller and President Picker:

We are a coalition made up of the following community groups, businesses, agencies and individuals: Oak Hills Property Owners Association, Lucerne Valley Economic Development Association (LVEDA), Johnson Valley Improvement Association, Homestead Valley Community Council, Morongo Basin Conservation Association, Mojave Desert Resource Conservation District, Lucerne Valley Market/Hardware, Basin and Range Watch, Desert Protective Council, Alliance for Desert Preservation, Mojave Communities Conservation Collaborative, Friends of the Big Morongo Canyon Preserve, Amargosa Conservancy, The Summer Tree Institute, Friends of Juniper Flats, Desert Tortoise Council, Brian Hammer, John Smith, Pat Flanagan, Bill Lembright, Jenny Wilder, Chris Carrillo, and David Mueller. Together, we represent a broad spectrum of residents, businesses, organizations, recreationists and conservationists in the High Desert of San Bernardino County.

This letter sets forth our comments regarding the Renewable Energy Transmission Initiative 2.0, better known as RETI 2.0, based on what we have learned through, among other things, participation in the September 10, 2015 Joint Agency Workshop, the November 2, 2015 RETI 2.0 Joint Agency Meeting and the January 29, 2016 RETI 2.0 Plenary Group Workshop, and through reviewing relevant written materials prepared by the California Energy Commission ("CEC") for the January 29, 2016 Plenary Group Workshop, such as the Data Sets and Model (TN #208929, submitted to the docket on January 22, 2016, which will be referred to in this letter as the "Location Model") and the "California Energy Demand Forecast for RETI 2.0" (which will be referred to in this letter as the "Demand Forecast"). This letter will also touch on some of the themes and concerns presented in correspondence, dated September 24, 2015, which we previously submitted to you regarding RETI 2.0 (we are including a copy of that letter with this correspondence). We ask that you carefully consider the points made in this letter, and in our attached September 24, 2015 letter, in formulating the RETI 2.0 report that is to be issued in March of this year.

The RETI 2.0 Location Model states that its goal is to "produce maps of conservation value (environmental and agricultural) to be used to help inform and evaluate PUC scenarios." Thus the primary purpose of these maps would be to identify areas in which the siting of renewable energy and related transmission projects is to be encouraged. RETI 2.0 clearly aspires to the "programmatic" approach adopted by the DRECP. Indeed, the Location Model selectively borrows maps from the DRECP Gateway. Unfortunately, RETI 2.0 thereby borrows some of the serious deficiencies infecting the DRECP, including the unnecessary sacrifice of irreplaceable natural habitat in the California desert (some members of this coalition have filed a Protest with respect to the DRECP's Final Environmental Impact Statement and Land Use Planning Amendment).

The RETI 2.0 Location Model would, if implemented, be far more damaging to this state's deserts than the DRECP would be because, as will be discussed below, the Location Model's approach would be even less friendly to environmental concerns.

The Location Model breaks down RETI 2.0's tasks as follows:

Task Nos. 1 and 2 -- integrate "protected areas data" and "exclusions" into its map, i.e., take areas protected by law against development off the table;

Task No. 3 -- model "landscape intactness" for the state – for this, the Location Model borrows the "Current Terrestrial Landscape Intactness (1km), DRECP" map from the

DRECP Gateway – which is meant, according to the legend on that DRECP map, to quantify "the signature of human impact on the landscape[1];"

Task No. 4 -- "combine [wildlife] corridor data with landscape intactness" – the Location Model's corridor map is drawn from the "Connectivity Linkages and Condition, DRECP" map; and

Task No. 5 -- employ tasks 1 through 4 to "produce conservation value models."

Absent from this task sequence is any mention of the "Conservation Values (1 km), DRECP" map found in the DRECP Gateway – a map confirming that many areas with low "landscape intactness" nevertheless retain high conservation values. Similarly missing are the conservation values and data underlying that DRECP map. The Location Model suggests that performance of the first four tasks would itself result in the production of RETI 2.0's own conservation values model, but on a moment's reflection one sees that this is absurd. Conservation Values cannot be derived from formulae and abstract modeling. Merely overlaying wildlife corridors over a "landscape intactness" map, or even overlaying a "landscape intactness" map over a "conservation values" map, does not yield up intelligible Conservation Values. Rather, one must accurately and comprehensively assess the biological/environmental value of the vast lands of this state and of the plant and animal species thereon, in their actual variety and complexity. If RETI 2.0 omits or de-emphasizes that step, it will produce a modeling protocol that over-relies on "landscape intactness," thereby rendering any area that has experienced an appreciable degree of human development or habitation fair game for transmission siting, regardless of that area's environmental value.

Such a flawed planning approach would, if implemented, work a particular disservice to desert regions -- like the North Slope area of the San Bernardino Mountains[2] -- that have intact natural habitats *and* established human communities. The "Conservation Values (1 km), DRECP" map confirms that the San Bernardino and Granite Mountain ranges, as well as most of

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[1] Under the Location Model's approach, a home maintained in a desert rural community is presumed to have the same intactness-destroying effect as would the presence of a brownfield, landfill or mine-site, which are the places that any utility-scale renewables should be located.

[2] The North Slope region includes Apple Valley, Lucerne Valley, Johnson Valley, Morongo Valley and Yucca Valley, and extends north to and includes the Granite Mountains. Solely for purposes of convenience and brevity, this letter includes Morongo Valley and Yucca Valley under the term "North Slope" region, even though they are located on the eastern slopes of the San Bernardino Mountains.

the inter-mountain and adjacent High Desert valley areas, have high conservation value (they are, accordingly, shown in various shades of green on the map), while the "Current Terrestrial Landscape Intactness (1km), DRECP" map denotes much of that region – specifically the inter-mountain areas and adjacent High Desert valleys -- in dark blue as having low "landscape intactness." RETI 2.0 appears to find low "landscape intactness" in the North Slope region and on that basis alone it consigns the North Slope to development. And it does so without engaging in, or calling for, a genuine environmental analysis.

Thus, the RETI process at this stage falls below the sub-par standard set by the DRECP which, after purporting to designate portions of the North Slope for protection against development, then designated – in its final EIS and LUPA – portions of the North Slope region as "Development Focus Areas" (in which renewable energy development is to be incentivized and fast-tracked) and Unallocated Lands (in which such development is permissible).

Moreover, the DRECP missed a great deal in its environmental analysis of the North Slope area. This is confirmed in a comment letter, dated February 23, 2015, on the Draft DRECP that was authored by Kristeen Penrod, the director of SC Wildlands. The SC Wildlands conservation values analysis is much more comprehensive and detailed than the one in the DRECP, and demonstrates that the DRECP did not go nearly far enough in inventorying the endangered/threatened plant and animal species along the North Slope. Further, SC Wildlands made recommendations concerning the protection of wildlife connectivity linkages that are much more specific than the DRECP (we are enclosing a copy of the SC Wildlands analysis with this letter).[3]

For these reasons (among others), the DRECP's final EIS and proposed LUPA has engendered strong, well-organized opposition from North Slope residents, and from elected officials of San Bernardino County, to the siting of utility-scale renewable energy and transmission in the North Slope region. The DRECP has received tens of thousands of opposition letters, petition signatures, etc. to that effect.

Anything less than an SC Wildlands-type conservation analysis could lead RETI 2.0 to mark the North Slope region for intensive and inappropriate development. This would degrade the North Slope region's vital and intact natural habitat in an irreplaceable and biologically rich ecological transition zone (between desert and mountain biomes) – and unravel its carefully-nurtured, harmonious and productive coexistence with a dispersed desert rural human

[3] The DRECP also ignored the USFWS's finding that a key desert tortoise corridor should be established from Joshua Tree to Apple Valley.

population. This entire region, which is suffused with important wildlife corridors, should clearly be exempted from transmission development.

RETI 2.0 cannot afford to take a superficial, reductive planning approach in recommending where new transmission should go; and it will be a wasted opportunity if it amounts to nothing more than "DRECP-lite." The energy future of this state is at stake, as is the viability of our desert's natural and human communities. RETI 2.0's planning approach must be entirely re-thought if it is to be made fair, comprehensive, transparent, inclusive and truly science-based.[4]

But the question of where new transmission should go is far less important than the question of whether we need significant amounts of new utility-scale renewable generation and related transmission in the first place. The fact is this supposed "need" is rapidly eroding in the face of new developments in energy efficiency, storage, and distributed generation. We discuss this in some detail in our September 24, 2015 letter. These technologies could and should become our primary tools for achieving state and federal environmental mandates, and indeed they are likely to be our primary tools because of their ever-increasing economic advantage over the old centralized model.

RETI 2.0's Demand Forecast, which incorporates the CEC's 2015 Integrated Energy Policy Report (the "2015 IEPR"), remains founded on the premise that "[d]eveloping the transmission needed to support increasing amounts of renewable resources will be critical to meeting the state's greenhouse (GHG) reduction goal . . ." (2015 IEPR, p. 107). For the reasons stated in our September 24, 2015 letter, and in our public comments at RETI 2.0 meetings, we urge RETI 2.0 to examine this premise with a critical eye. It is difficult to see how the RETI process can serve as a reliable analytical tool if it simply leaps over the analysis.

The Environmental Protection Agency – the federal agency with primary responsibility for the environment – made well-supported comments on the Draft DRECP in support of the wisdom and necessity of substantially reducing the amount of utility-scale planned for, in view of the rapid penetration of distributed generation into California power markets. The EPA's comments apply with equal weight to the RETI 2.0 planning process because it, like the DRECP,

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[4] We note that the Location Model does not call for consideration of the concerns raised in our September 24, 2015 letter, such as the fact that our desert's already over-drafted groundwater basins cannot support an influx of new renewable projects and related transmission. Our letter also pointed out that such construction would have direct and lasting health impacts due to resulting fugitive dust and Valley Fever outbreaks.

is predicated on the notion that the vast majority of the state's renewable energy will be generated by ground-mounted, transmission-dependent utility-scale projects.

The EPA recommended, in its February 23, 2015 letter, that the DRECP's REAT agencies re-evaluate "the amount of renewable energy that may need to be produced in the Plan Area," stating:

> "We recognize that federal and state directives compel the REAT agencies to plan for potential renewable energy development on Southern California's desert lands; however, significant market and policy developments affecting the renewable energy industry – such as the sharp decline in the cost of rooftop solar-powered electricity and rapid deployment of energy storage – warrant a re-evaluation of the renewable energy planning effort conducted for the Plan Area by the California Energy Commission in July 2012. **These developments have the potential to drastically increase the amount of distributed forms of renewable energy (including rooftop solar) produced in the state**, which could reduce the need for utility-scale solar projects to be developed in the Plan Area." (Emphasis added.)

The EPA's comment letter also stated that:

(1) "Three developments, in particular, have the potential to dramatically alter how electricity is produced, transmitted, and stored in California: the sharp decline in the cost of rooftop solar-powered electricity; the growing demand for, and deployment of, energy storage; and Governor Jerry Brown's recent proposal to raise the State's renewable portfolio standard;" and that

(2) The passage of A.B. 2514, which mandates 1,325 gigawatts of new energy storage by California's three large investor-owned utilities by 2020, has resulted "in contracts being secured for hundreds of megawatts of new energy storage. In addition, the 'road map' for smoothly deploying energy storage into California's grid, which was detailed in a report released in January 2015 by the California Independent System Operator, the California Energy Commission, and the California Public Utilities Commission, should make it easier to use batteries and other devices to store renewable power and release it at opportune times, thereby

enabling greater amounts of energy from rooftop and other distributed solar systems to be fed into the grid."[5]

The Demand Forecast, and the 2015 IEPR, are not by any means blind to the promise held out by distributed generation. They project that residential PV will increase markedly, but not by nearly enough given industry trends.[6]

The 2015 IEPR's 7,700 MW projection for residential PV is much too low, especially given that:

(1) According to a publication of the National Renewable Energy Laboratory (which is affiliated with the U.S. Dept. of Energy), entitled "U.S. Renewable Energy Technical Potentials: a GIS-Based Analysis (July 2012)," of the 258,525 GWH of energy used by California in 2010, 106,411 GWH – or 41% -- could potentially be supplied by rooftop solar;

(2) 68,000 MW of reasonable Distributed Generation potential was posited in this state in a well-researched 2007 study (known as the "PIER study") commissioned and received by the CEC;

(3) UCLA's Luskin Center for Innovation did a study showing that the rooftops in Los Angeles County alone could accommodate over 22,000 MW of Distributed Generation solar panels; and

(4) a 2009 Black & Veatch and Energy and Environmental Economics, Inc. report to the PUC found 11,543 MW of large (greater than 1/3 acre) urban rooftop capacity and 27,000 MW of ground-mounted capacity near existing substations. A June 2010 update of the study

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[5] Our September 25, 2015 letter also describes the federal and California statutory and regulatory policies that are directed at reducing GHG, through a great variety of incentives and disincentives, which are just as likely to work against utility-scale as for utility-scale.

[6] The 2015 IEPR notes that "[s]elf-generation is projected to reduce peak load by more than 6,900 megawatts (MW) in the new mid case by 2025, an increase of more than 2,000 MW compared to *CEDU 2014*. Residential PV is a key factor in this increase: by 2026, residential PV peak impacts reach almost 3,000 MW in the *CED 2015 Adopted* mid case, corresponding to more than 7,700 MW of installed capacity."

found that California has a capacity of 55,000 MW of decentralized solar PV (over 100,000 GWh/ year).[7]

Chairman Weisenmiller and President Picker stated, in their March 14, 2015 article in the Sacramento Bee, that:

> "One thing is for sure – the next few years of electric power will be as different as the past 10 years of renewable energy development was from the past 50 years of fossil fuel power plants. More of the same policies will not do the trick."

To be consistent with the vision statements cited above – and to avoid more of the same policies that no longer do the trick – RETI 2.0 must be willing to depart from traditional energy planning tools, i.e., the designation of certain zones for development of centralized, utility-scale renewables and related transmission infrastructure. That mode of generation is being rapidly eclipsed by far-reaching advances in behind-the-meter distributed generation, which produces clean energy without requiring costly and environmentally-damaging new transmission infrastructure;[8] in battery storage, which promises to obviate the oversupply/undersupply issue; and in increases in energy efficiency, which greatly reduce the need for power generation.[9]

We greatly appreciate your time in considering all of the foregoing, and we look forward to a vigorous and productive engagement in the RETI 2.0 process.

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[7] The National Renewable Energy Laboratory article can be found at http://www.nrel.gov/docs/fy12osti/51946.pdf. The above-referenced UCLA study is available at http://innovation.luskin.ucla.edu/sites/default/files/Bringing%20Solar%20to%20Los%20Angeles.pdf. the Black & Veatch report is available at http://tinyurl.com/ 45n2j7x.

[8] Due in part to the high cost of building the plants and the transmission facilities needed to connect them to the grid, Californians pay the second-highest electricity rates in the lower forty-eight states, after certain parts of New England. Any new wave of utility-scale projects would require a large and prohibitively expensive amount of additional capital expenses in terms of transmission, which cannot be blithely heaped on the backs of ratepayers. According to an estimate obtained by the Alliance for Desert Preservation from Flynn Resource Consultants, Inc., the new 500 KV lines posited in Alternative 1 of Appendix K to the draft DRECP, which are needed to handle the utility-scale renewable energy projects it seeks to fast-track into DFAs, would cost between $10 Billion to $22.5 Billion. To paraphrase a panelist at the September 10, 2015 Joint Agency Workshop, the best transmission is the one that is not built.

[9] According to the CEC's latest Tracking Progress report, there was a doubling of cumulative energy efficiency between 2000 and 2013.

Very truly yours,

Community Associations, Businesses and Organizations:

OAK HILLS PROPERTY OWNERS ASSOCIATION

Terry Kostak, President

JOHNSON VALLEY IMPROVEMENT ASSOCIATION

Betty Munson, Secretary, for
Joanna Wright, President

MORONGO BASIN CONSERVATION ASSOCIATION

Sarah Kennington, President

BASIN AND RANGE WATCH

Kevin Emmerich, President

LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION

Chuck Bell, President

HOMESTEAD VALLEY COMMUNITY COUNCIL

Joanna Wright, President

MOJAVE DESERT RESOURCE CONSERVATION DISTRICT

Paul Johnson, Vice Chair

LUCERNE VALLEY MARKET/ HARDWARE

Linda Gommel, Chief Executive Officer

DESERT PROTECTIVE COUNCIL

Terry Weiner, Projects and Conservation Coordinator

ALLIANCE FOR DESERT PRESERVATION

Richard Ravana, President

MOJAVE COMMUNITIES CONSERVATION COLLABORATIVE

Lorrie L. Steely, Founder

FRIENDS OF THE BIG MORONGO CANYON PRESERVE

Dave S. Miller, President, Board of Directors

AMARGOSA CONSERVANCY

Patrick Donnelly, Executive Director

THE SUMMER TREE INSTITUTE

Robin Kobaly, Executive Director

DESERT TORTOISE COUNCIL

Edward L. LaRue, Jr., Ecosystems Advisory Committee Chair

FRIENDS OF JUNIPER FLATS

Jennifer Wilder, Coordinator

Individuals:

Brian Hammer, Analyst and Adjunct Professor (resident of Adelanto)

John Smith (resident of Apple Valley)

Pat Flanagan (resident of Twentynine Palms)

Bill Lembright (resident of Lucerne Valley)

Jenny Wilder (resident of Apple Valley)

Chris Carrillo (business owner in Redlands)

David Mueller (resident of Apple Valley)

cc: Governor Edmund G. Brown, Jr. (by email: govnews@ca.gov)
Sen. Kevin de Leon, Senate President pro tempore (by email to consultant: Kip.Lipper@sen.ca.gov)
Hon. Kevin Mullin, Assembly President pro tempore (by email: assemblymember.mullin@assembly.ca.gov)
Comm. Karen Douglas, J.D. (by email to executive assistant: Ollie.Awolowo@energy.ca.gov)
Comm. David Hochschild (by email to executive assistant: Kathleen.McDonnell@energy.ca.gov)
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Mr. Scott Flint (by email: scott.flint@energy.ca.gov)
Assemblyman Jay Obernolte (by email: assemblymember.obernolte@assembly.ca.gov)
Sen. Jean Fuller (by email: Senator.Fuller@sen.ca.gov)
Congressman Paul Cook (by email to assistant: matt.knox@mail.house.gov)
Mr. Robert Lovingood (First District Supervisor for San Bernardino County; by email: SupervisorLovingood@sbcounty.gov)
Mr. James Ramos (Third District Supervisor for San Bernardino County; by email: SupervisorRamos@sbcounty.gov)
Mr. Gregory Devereaux (by email: Greg.Devereaux@cao.sbcounty.gov)
Ms. Terri Rahhal (by email: Terri.Rahhal@lus.sbcounty.gov)
Mr. Tom Hudson (by email: Tom.Hudson@lus.sbcounty.gov)
Mr. Don Holland (by email: Don.Holland@bos.sbcounty.gov)

ATTACHMENT

SEPTEMBER 24, 2015 LETTER RE RENEWABLE ENERGY TRANSMISSION INTITIATIVE 2.0 FROM ALLIANCE FOR DESERT PRESERVATION, ET AL.

September 24, 2015

Chairman Robert B. Weisenmiller
California Energy Commission
1516 Ninth St.
Sacramento, Calif. 95814

President Michael Picker
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, Calif. 94102

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Re: Renewable Energy Transmission Initiative 2.0

Dear Chairman Weisenmiller and President Picker:

We are a coalition made up of the following community groups, businesses, agencies and individuals: Oak Hills Property Owners Association, Lucerne Valley Economic Development Association (LVEDA), Johnson Valley Improvement Association, Homestead Valley Community Council, Morongo Basin Conservation Association, Mojave Desert Resource Conservation District, Tourism Economics Commission, Lucerne Valley Market/Hardware, Basin and Range Watch, California Desert Coalition, Desert Protective Council, Alliance for Desert Preservation, Mojave Communities Conservation Collaborative, Friends of the Big Morongo Canyon Preserve, Amargosa Conservancy, The Summer Tree Institute, 29 Palms Inn, Protect Our Communities Foundation, Desert Tortoise Council, Brian Hammer, Marina D. West, John Smith, Pat Flanagan, Bill Lembright, Mildred M. Rader, Jenny Wilder, Chris Carillo, David Mueller, Bill Powers, P.E., Tom Budlong and Neville Slade. Together, we represent a broad spectrum of residents, businesses, organizations, recreationists and conservationists in the High Desert of San Bernardino County.

This letter sets forth our comments regarding the Renewable Energy Transmission Initiative 2.0, better known as RETI 2.0. Given that what we know thus far about RETI 2.0 comes chiefly from the keynote and panel speakers at the September 10, 2015 Joint Agency Workshop, and is therefore limited, our comments will address general themes and over-arching concerns.

1. **RETI 2.0 Should Remain True to the Vision Stated at the Joint Agency Workshop, Which Calls for a Fresh Look at Geographical and Technological Diversity, Consensus-Building, Engaging with Local Governments, Maximizing Existing Transmission and Integrating Environmental Concerns**.

If RETI 2.0 stays true to the vision put forth at the Joint Agency Workshop, it could become a bridge to a sustainable energy future in which our human and natural communities continue to thrive. We were encouraged to hear, among other things, that: (1) RETI 2.0 will abandon RETI 1.0's emphasis on "getting things built," and that, given that renewable energy generation is now established, there is not as much "tension on the need to force projects;"[1] (2) it is time now to step back, take a breath and use RETI 2.0 to take a fresh look at "best fit," geographical and technological diversity, consensus-building, engaging with local governments, maximizing existing transmission and using renewable energy as part of the solution on the integration and reliability side; (3) RETI 2.0 must be more "nuanced and vigorous in terms of integrating environmental concerns" in the planning process; and (4) because we now know a lot more than we knew when RETI 1.0 was launched in 2008, and because so much has changed in the energy economy since then, previously unavailable strategic options can be now be brought into the mix.

The California Energy Commission has adopted a similarly progressive tone in the first sentence of its Distributed Generation Strategic Plan, stating that "[w]e are at the threshold of reinventing the electric power system."

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[1] In that regard, we were informed at the Joint Agency Workshop that RETI 1.0's goal of siting 66,000 MW of renewables in the California desert (out of a total projected 80,000 MW state-wide), is no longer part of the planning picture.

These forward-looking aspirations are also reflected in a March 14, 2015 article in the *Sacramento Bee*, authored by Chairman Weisenmiller and President Picker, which states that:

> "One thing is for sure – the next few years of electric power will be as different as the past 10 years of renewable energy development was from the past 50 years of fossil fuel power plants. More of the same policies will not do the trick."

To be consistent with the vision statements cited above – and to avoid more of the same policies that no longer do the trick -- RETI 2.0 must be willing to depart from traditional energy planning tools, i.e., the designation of certain zones for development of centralized, utility-scale renewables and related transmission infrastructure. That mode of generation is being rapidly eclipsed by far-reaching advances in behind-the-meter distributed generation, which produces clean energy without requiring costly and environmentally-damaging new transmission infrastructure;[2] in battery storage, which promises to obviate the oversupply/undersupply issue; and in increases in energy efficiency, which greatly reduce the need for power generation.[3]

2. <u>The Technology and the Energy Markets Are Already Choosing Site-Specific, Distributed Generation Over Centralized Generation</u>.

Utility-scale energy projects – and related transmission projects -- are rapidly becoming obsolete. They are too expensive, they entail enormous needless transmission costs (see Fn. 2), and they create big environmental and economic problems. The expertise, the money, and

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[2] Due in part to the high cost of building the plants and the transmission facilities needed to connect them to the grid, Californians pay the second-highest electricity rates in the lower forty-eight states, after certain parts of New England. Any new wave of utility-scale projects would require a large and prohibitively expensive amount of additional capital expenses in terms of transmission, which cannot be blithely heaped on the backs of ratepayers. According to an estimate obtained by the Alliance for Desert Preservation from Flynn Resource Consultants, Inc., the new 500 KV lines posited in Alternative 1 of Appendix K to the DRECP, which are needed to handle the utility-scale renewable energy projects it seeks to fast-track into DFAs, would cost between $10 Billion to $22.5 Billion. To paraphrase a panelist at the Joint Agency Workshop, the best transmission is the one that is not built.

[3] According to the CEC's latest Tracking Progress report, there was a doubling of cumulative energy efficiency between 2000 and 2013.

regulatory momentum are moving in the opposite direction, toward site-specific power generation (distributed generation, or "DG"), teamed with a hard-hitting package of innovative efficiencies and conservation techniques.

If anyone has doubts about this enormous sea change in the energy picture, these doubts are quickly dispelled by the executives and trade groups of the companies that have the most to gain by keeping the old system in place: the investor-owned utility companies.

According to the "2015 State of the Electric Utility Survey Results (Here's What the Utility of the Future Looks Like, According to Over 400 U.S. Electric Utility Executives)," which is published by Utility Dive Brand Studio in association with Siemens, utilities are moving away from "the traditional vertically integrated utility model toward a more distributed, service-based model." In other words, according to the survey, DG is seen as the biggest driver of industry growth, while "[t]he opposite of distributed energy – centralized generation – seems to offer little promise of future revenue to utilities. Once a profit center, central station power is viewed by only 8% of utilities as their biggest growth opportunity." The reason for this pronounced shift: "In 2015, the U.S. electric utility is in a state of transition . . . Emerging technologies, shifting consumer expectations, and new energy economics are causing the industry to rethink the business and regulatory models that have served them for over 100 years."

Edison Electric Institute, the utilities' trade group, warned members (in a January 2013 report) that DG and companion factors have put them in the same position as airlines and the telecommunications industry in the late 1970s. Essentially the same point was made in an article in *Bloomberg Business*, entitled "Why the U.S. Power Grid's Days Are Numbered" (August 22, 2013).

David Crane, the CEO of NRG Energy – an energy giant with more than $6 billion in assets world-wide -- agrees that the old model of the U.S. electrical grid, with its centralized power plants and lengthy transmission lines, is doomed to obsolescence (according to the *Bloomberg Business* article mentioned in the previous paragraph). He said that in about the time it has taken cell phones to supplant land lines in most U.S. homes, the grid will become increasingly irrelevant as customers move toward decentralized homegrown green energy, and that some customers, particularly in the sunny West and high-cost Northeast, already realize that "they don't need the power industry at all." Mr. Crane's championing of decentralized DG is particularly noteworthy, given that NRG Energy is the developer of the Ivanpah solar thermal plant.

It is easy to see the potential in DG: The rooftops and parking lots are in close proximity to the consumer, and they present none of the vexing environmental problems presented by

large-scale energy plants. UCLA's Luskin Center for Innovation did a study showing that the rooftops in Los Angeles County alone could accommodate over 22,000 megawatts of DG solar panels. A 2009 Black & Veatch and Energy and Environmental Economics, Inc. report to the CPUC found 11,543 megawatts of large (greater than 1/3 acre) urban rooftop capacity and 27,000 megawatts of ground-mounted capacity near existing substations. A June 2010 update of the study found that California has a capacity of 55,000 megawatts of decentralized solar photovoltaic (over 100,000 GWh/ year).[4]

Indeed, as stated in CEC's above-quoted Distributed Generation Strategic Plan, "[w]e are at the threshold of reinventing the electric power system."[5]

By shrewdly taking note of just how much DG has already supplanted centralized generation, RETI 2.0 is perfectly positioned to anticipate residential and commercial development which employs these new technologies and efficiencies. It is equally well positioned to avoid an initiative which encourages the destruction of significant portions of the State's desert and Central Valley with outmoded large-scale solar projects, wind turbine plantations and transmission infrastructure.

We are fortunate that the State's Legislature and regulators have already acted to smooth the way for adoption of policies and plans consistent with the new energy paradigm. Together, these statutes, rulings and programs provide a comprehensive roadmap enabling the formulation of a truly forward-looking RETI plan. We now turn to a discussion of some of the most

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[4] We were informed by a member of Chairman Weisenmiller's staff, during the Joint Agency Workshop, that RETI 2.0 recognizes DG's potential, as reflected in a recent IPER forecast that there will be 12,000 to 14,000 MW of new rooftop solar installed within the next ten years. These figures greatly understate the trajectory of DG's growth, as reflected in the CEC's own data, and therefore they should not be relied upon by RETI 2.0 in formulating its planning assumptions, particularly given that most, if not all, of the State's energy needs could be supplied by DG located in the built environment. If RETI 2.0 is to achieve its stated aims, it must take into account the trends evidenced by the existing data regarding the increase in DG use.

[5] New, cutting edge renewable energy technologies are constantly emerging. For instance, using turbine-generators, otherwise wasted renewable energy – in the form of water flowing through the State's pipelines – can be harnessed to create electricity near load centers. See www.nlineenergy.com.

important such laws and programs, and we provide specific examples of how certain counties and cities have taken advantage of them.

3. California Statutes, Regulations and Programs are Already in Place Which Favor DG, and Certain Counties and Cities Have Already Implemented these Plans and Policies.

We will briefly highlight some of the referenced laws and policies below:

(1) **Public Utilities Code Section 454.5(b)(9)(C) and CEESP.**

Section 454.5(b)(9)(C) states that electric utilities "shall first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible."

Tasked with making this statutory requirement a reality, the CPUC has initiated several proceedings[6] out of which has emerged the all-important California Energy Efficiency Strategic Plan (CEESP). The CPUC calls the CEESP the "Big Idea" approach. The "Big Idea" is this: Zero Net Energy (ZNE) for all new residential construction by 2020 and for all new commercial construction by 2030, and for 50% of all new construction by 2030.

ZNE isn't just some distant aspirational goal. The City of Lancaster announced that simply by installing rooftop solar on a fraction of its homes, parking lots and schools, it is already more than halfway toward its goal of becoming the first Net-Zero city.

As important as Lancaster is as an example, the crucial point is that the utilities regulated by the CPUC are compelled to show compliance with Section 454.5(b)(9)(C), and this compliance almost certainly will entail a major reliance on new efficiencies, conservation measures and technological innovations at the level of individual building structures, leading to a revolutionary new paradigm where new building projects do not result in any new energy demand whatsoever.

(2) **Public Utilities Code Section 769.**

When the California Legislature enacted AB 327 (Section 769), it required investor-owned utilities ("IOUs") to come up with a plan to integrate cost-effective Distributed

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[6] These PUC proceedings are D08-09-040, 08-07-011 and 10-09-047.

Resources, which are defined as "distributed renewable energy resources, energy efficiency, energy storage, electric vehicles, and demand response technologies."

The CPUC took up this mantle in its Case No. 14-08-013, which relates to "Distribution Resources Plans." In its rulings and orders thus far, the CPUC says, sagely, that the goal must be to maximize penetration of DG while minimizing the need for transmission and distribution upgrades. As the CPUC specifically notes, this is a revolutionary approach, because for the first time it takes into account customer-side interactions, and not just meeting load growth and peak consumption.

The IOUs were required to come up with their initial plans by early summer, 2015. As antithetical as the five statutory elements of Distributed Resources might be to the old utility model of doing business, the IOUs must propose specific plans to *maximize* Distributed Generation, while *minimizing* the old utility staples of new transmission and distribution facilities and upgrades. Any plan by an IOU dependent on construction of new transmission lines would first have to justify its departure from the criteria embedded in P.U.C. Code Section 769.

(3) **AB 811 (Financing Through Incremental Property Tax).**

California's AB 811 (July 21, 2008) authorizes cities and counties to designate areas within which willing property owners may use the property tax assessment process to contract for the installation of distributed energy generation, as well as energy efficiency improvements. These financing arrangements would allow property owners to finance renewable generation and energy efficiency improvements through low-interest loans that would be repaid as an item on the property owners' property tax bills.

(4) **AB 43 (Green Tariff Shared Renewables).**

California's Assembly Bill 43 created the Green Tariff Shared Renewables program. This program incentivizes groups like renters, churches, schools and businesses to build unique, on-site shared solar renewable energy projects, with a specific portion of the project capacity to be located within "disadvantaged communities" in order to encourage job creation.

(5) **AB 2514 (energy storage).**

AB 2514 mandates 1.325 gigawatts of new energy storage by California's three large investor-owned utilities by 2020 in order to make it easier to use batteries and other devices to store renewable power and release it when needed.

(6) **AB 117 (Community Choice Aggregations).**

California Assembly Bill 117 (embodied in Public Utilities Code Sections 218.3, 331.1, 366, 366.2, 381.1, 394 and 394.25) permits the formation of Community Choice Aggregations, or "CCA" programs, under which local governments are allowed to set up power-purchasing agencies and sell that energy directly to the consumer. These programs are given the flexibility to encourage and incentivize rooftop solar, local small-scale (1 MW or less) renewable energy generation and energy efficiency.[7]

(7) **Net Metering and Feed-In Tariffs**. Net metering benefits the homeowner who installs his or her own home-based solar or wind system, by giving a credit for the energy generated. Certain counties have programs in addition to the ones existing under the auspices of the State. For example, SCP, the Sonoma County CCA program, has established a net metering program, for example, which credits and pays for such energy at a rate currently lower than that of PG&E. In establishing its net metering program, the City of Lancaster set electricity rates that city officials said will undercut Southern California Edison's standard residential prices and business rates by 3% and by nearly 15% for its lower-income households.

The feed-in tariff refers to what a renewable energy producer is paid for the energy it feeds into the grid. SCP, for example, has a special feed-in tariff price of $95/megawatt-hour, with the following restrictions: the producer must be smaller than 1 MW, must be compliant with RPS standards, must be new, must be connected to the grid, and located in the Sonoma service territory. With this tariff, Sonoma County has created a big incentive for DG, and to that extent avoided the problems associated with utility-scale projects and the big transmission projects that go with them.

(8) **Miscellaneous Federal, Local and Organizational Guidelines and Programs.**

For example, the U.S. Department of Energy's Community Energy Strategic Planning (CESP) lays out a step-by-step process for local governments to create a comprehensive, long-

[7] CCAs are becoming increasingly wide-spread – JPA's formed by Sonoma and Marin Counties, and the City of Lancaster have adopted CCAs, and four other states besides California allow CCAs; in fact, in Illinois, the City of Chicago and 80% of all households have their power supplied through CCAs. The County of Los Angeles is considering adopting a CCA.

term energy strategy, and it identifies various sources of funding, including block grants, loan programs and technical assistance needed to implement it.

Another example is the Community Solar Program (CSP), which is a program created by the Los Angeles Department of Water and Power (LADWP) to incentivize the development of residential and commercial rooftop solar systems and establish a feed-in tariff program. The LADWP has published an outline of this program and is currently soliciting comments on it.

The Interstate Renewable Energy Council (IREC) has instituted shared community and cooperative solar programs across this country. Based on this "boots on the ground" experience, IREC has prepared and compiled, and will share, reports, best practices guidelines and regulatory policy recommendations and innovations that have become foundational elements in regional, state and federal policy-making efforts, all of which have enabled millions of people to gain access to distributed energy.

4. <u>The Siting of Utility-Scale and Transmission Projects Must Take Into Account The Economic and Environmental Impacts Such Projects Have on the People Who Live in Their Vicinity</u>.

A. <u>Economic Impacts of Utility-Scale and Transmission Projects</u>.

Such impacts would include the resulting decline in land values, a decline in property tax revenue and an overall loss of economic value as vast swaths of the State would effectively be repurposed as industrial zones. Utility-scale projects generate only a small amount of property tax (solar PV facilities generate almost none), and sales tax revenues evaporate once projects are completed, as do construction jobs. In fact, jobs associated with home-building and new retail development would be entirely displaced. Property values – and property tax revenues – drop because no one wants to live next to utility-scale and transmission projects.

Such projects also destroy the intactness of the State's relatively undeveloped land. By way of an example, the value of tourism, recreational and related uses to San Bernardino County -- the value of keeping its deserts intact -- has been estimated at **$1 Billion *per year*** according to a University of Idaho study discussed in Basin Energy Assessment Team's "Renewable Energy Analysis" (October 2013).

If RETI 2.0 relies to any degree on such projects, a careful study would need to be made regarding their above-referenced economic impacts.

B. Environmental Impacts of Utility-Scale and Transmission Projects.

As for being a good neighbor – the track record is not great for industrial-scale and transmission projects. According to the EPA's recently-filed comment letter to the DRECP: "Many… projects on federal land are now encountering impacts during operation and maintenance that are imposing burdens on surrounding communities . . ."[8]

Such projects create noise and dust (given that the biologically-productive surface layer of topsoil and the plants thereon are scoured off during the construction process, which eliminates immense potential for carbon sequestration).[9] They also destroy the beauty of the natural environment and cause essentially irreversible destruction to delicate habitats.

Moreover, utility-scale projects, even large-scale solar PV projects, require a great deal of water in their construction and in their maintenance (primarily for dust-suppression). Developers quite often underestimate the amount of water required when they present their applications, as members of our coalition could attest.

5. RETI 2.0 Must Be Founded on True Baseline Water Studies Solid Data and an Assessment of the Cumulative Impacts that Industrialization Would Have on Groundwater Basins, Including on Those That Are Already Over-Drafted.

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[8] The suggestion is often made that utility-scale power facilities should be located on "disturbed," i.e., previously developed or farmed land. But, given that *all* existing communities have been previously graded and developed for homes, that definition would make all of them ripe for development with industrial-scale energy facilities. By the same token, many desert and Central Valley regions have at some point been farmed and all of these vast tracts of land should not be opened to industrial-scale development. Any place where people live, work, play or go to school ought not be considered "disturbed." The only areas that should be considered "disturbed" would be ones that have been *severely degraded* by human activity, such as brownfield sites, abandoned landfill sites and abandoned mine areas, provided that they are not in or near residences, rural communities, wildlife corridors and sensitive environments.

[9] RETI 2.0 should incorporate a comprehensive study as to whether and to what extent putting utility-scale projects in the desert – in light of the loss of sequestration they cause due to ground disturbance – results in a net gain in carbon reduction.

To the degree that RETI 2.0 focuses on utility-scale renewables and transmission projects, it would require that baseline data and cumulative impact studies be obtained in order to make an intelligent assessment as to whether and what extent such projects might render specific groundwater basins unsustainable and incapable of supporting the current (and projected) needs of the State's businesses and residents.

For example, the data that are currently available indicate that San Bernardino County might be entering into a prolonged water crisis, especially given that we are now in the midst of a fourth year of record low levels of snow-pack and rain.[10]

According to the DRECP, San Bernardino County's well levels have suffered significant declines and groundwater pumping has caused land subsidence of many tens of feet over basins along the Mojave River and further east from Lucerne Valley to Morongo Valley. The DRECP also states most of our groundwater basins are in overdraft or are stressed.

According to the State Water Resources Control Board (the "SWRCB") (in its comments to the DRECP):

> "Extensive development of solar and/or geothermal energy will require a large volume of water supply which is not readily available in a desert environment. Existing sources are already developed and many aquifers are under overdraft or stressed conditions. Extracting an additional 100,000 AF/Y of groundwater will make the situation worse. USGS-GAMA studies indicate that the majority of groundwater in the Basins and Ranges hydrologic province is thousands of years old (i.e., it takes thousands of years for groundwater to travel from the point of recharge to the point of discharge (well)).[11] Only small areas adjacent to the mountains are recharged directly by rainfall or snowmelt, and this groundwater is already developed. Even if there is younger groundwater with the aquifer, it occurs in a relatively thin layer on top of the older

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[10] Our comments in this subsection (and in the following subsection) are directed primarily to the High Desert area of San Bernardino County because we are most familiar with that region. But they apply to some degree, perhaps even to a greater degree, to regions throughout this State.

[11] According to the SWRCB, "[i]n most areas of the desert, deeper, older groundwater is saline. Excessive pumping will likely cause migration of saline water into fresh water aquifers [p. 11]." The SWRCB also says that our aquifers represent a closed system where 66% of the groundwater is between 100 and 33,000 years old with the only "young" recharge coming from the mountains [p. 18].

> groundwater, and the older groundwater quality becomes worse with depth. The EIR/EIS should address the likelihood that eventually large scale development will require an outside source of water, or water treatment and recycling, instead of groundwater mining [p. 22 -23]."

In December 2014, the SWRCB reduced to 00.00% its water allocation to our groundwater basins (the SWRCB later raised it, but only to 5%).

Given our lack of knowledge as to what to expect from California's climate, and that all we have to go on is about 150 years of modern recordkeeping in this state, we do not really "know anything about what is normal in nature's brief millennia" [March 19, 2015 article in *Newsweek*, entitled "Why Californians Are Starved of Water," by Victor Davis Hanson]. That article goes on to say that "[o]ur generation may be oblivious to that fact, but our far more astute and pragmatic forefathers certainly were not," noting that, "[w]hen Europeans arrived in California in the 15th and 16th centuries, they were struck by how few indigenous peoples lived in what seemed paradise—only to learn that the region was quite dry on the coast and in the interior." In short, because we really do not know what to expect in terms of groundwater replenishment, based on only about 150 years of climate recordkeeping – because we really do not know what is "normal" in California, other than that its southern portion has long been very arid – any estimates of the excess groundwater that might be available for big renewable energy projects should err greatly on the conservative side.

Against this background, it is crucial that RETI 2.0 obtain the following data and studies, *before* adopting a plan that places any substantial degree of reliance on the development of new transmission and utility-scale renewable energy projects:

1) How much potable water is found in specific affected groundwater basins?

2) How much water do specific types of renewable energy projects actually use in their construction, dust-control efforts, maintenance and operations (as opposed to the rather suspect estimates typically provided by project proponents)?

3) Are specific groundwater basins being recharged at all and, if so, at what rate?

4) How much groundwater is being pumped to meet our current needs from specific groundwater basins (and at what rate)?

5) What effect is the drought likely to have? and

6) At what level of groundwater pumping will specific groundwater basins become unsustainable (and/or begin to bring in through migration, or up from the underlying saline level, non-potable water that will ruin the aquifers)?

The SWRCB made much the same recommendations in its comments to the DRECP – recommendations that apply with equal force to RETI 2.0.

The SWRCB stated, among other things, that groundwater monitoring should assess surface elevation, as well as quality because, as levels drop, older water is extracted (p. 8) – the SWRCB noted that "[i]n most areas of the desert, deeper, older groundwater is saline. Excessive pumping will likely cause migration of saline water into fresh water aquifers [p. 11]" – and that specific metrics should be established to determine what a "substantial change" would be to groundwater levels – like a certain percentage from an established baseline or a certain number of feet over a period of a year – with appropriate response measures defined (the same goes for water quality -- with physical and chemical parameters to be defined) (p. 8 - 9; see also p. 23). The SWRCB recommends that a "trigger point" for groundwater quality (e.g., for "Total Dissolved Solids") be established, and that "pumping mitigation may involve reduced pumping or cessation of pumping [p. 11]." The SWRCB also opined that the Lahontan and Colorado River regional water quality control plans be considered, with narrative and numerical objectives established to limit degradation even where water quality standards are exceeded (p. 13 -14; see also p. 17).

Without such data – and without a comprehensive and cumulative study of the impact on groundwater that an influx of utility-scale projects would have – RETI 2.0 would lack the metrics needed to establish the crucial "trigger points" at which groundwater pumping would render specific groundwater basins unable to meet the needs of residents and businesses. In short, RETI 2.0 would be unable to make an intelligent determination, prior to enactment of a plan, as to whether such projects would "break the bank" in terms of our available water supply, nor would RETI 2.0 know when to "pull the plug" on groundwater extraction in order to preserve and protect particular aquifers.

RETI 2.0 cannot afford to assume that there will be enough water to satisfy the needs of our citizens, *and* the needs of big utility/transmission developers. We need to know a lot more about groundwater before we create a master plan that would potentially deplete irreplaceable groundwater reserves laid down for the most part during the last Ice Age.

6. <u>RETI 2.0 Would Need Sophisticated Baseline, Measurement, Prevention and Abatement Criteria for Dust and Valley Fever</u>.

Utility-scale and transmission projects create a great deal of dust and dust-borne disease.

There are lots of examples of this throughout the State. For instance, most of the desert ecoregions in San Bernardino County are in nonattainment when it comes to air pollutants like ozone, PM10 and PM2.5 particulates. The EPA recently identified 516,000 acres of soil with moderate-to-high wind erosion potential, just within the DFAs in the DRECP, much of which are in this County. According to the EPA's comment letter to the DRECP, "the potential for exposure to Valley Fever is of particular concern for large-scale construction projects in the arid regions of the southwest including the Mojave and Sonoran Deserts as well as San Joaquin Valley."

By way of another example, 28 workers at two solar construction sites in San Luis Obispo County came down with Valley Fever. At that point the County Public Health Department, working with the California Department of Public Health, developed specific recommendations, which went far beyond conventional dust control measures. Yet the draft DRECP, after acknowledging that soil disturbance could lead to release and transmission of Valley Fever spores, particularly in the West Mojave area, ignored the experience of San Luis Obispo, and proposes the same old clearly ineffective "band aids." RETI 2.0 cannot go in that same direction.

To the extent that RETI 2.0 adopts utility-scale and transmission projects as planning tools, it would have to establish a data baseline for soils and State-wide baseline maps depicting the various types of soils, as well as prevention and abatement criteria that actually work, and adopt monitoring and enforcement criteria with real teeth in them, as opposed to mere "slaps on the wrist."

Only after an understanding is gained as to soils conditions throughout the State, can wise assessments be made as to how much injury utility-scale construction and operations would inflict on our health. Further, RETI 2.0 could then decide whether particular areas should be placed off limits to large-scale construction, due to their susceptibility to wind erosion, Valley Fever outbreaks and the like.

7. <u>The State's RPS and GHG Mandates Do Not Require that We Waste the Opportunity, and Avoid the Responsibility, of Engaging in Reasoned and Wise Energy Planning</u>.

The RPS and GHG mandates were cited in the Joint Agency Workshop as the drivers behind RETI 2.0. Unfortunately, even though we have the technical ability to include DG-generated energy in the RPS, the RPS does not yet do so, which tilts the playing field in favor of the development of utility-scale/transmission facilities. But there are CPUC proceedings actively considering this issue and, given current trends, it is inevitable that behind-the-meter DG will eventually be included in the RPS. RETI 2.0 should adjust its goals accordingly.[12]

In terms of the RPS mandate, RETI 2.0 should take its direction from Governor Brown's inaugural speech in January of this year – in which he recommended increasing the RPS goal to 50% by 2030 – made absolutely no mention of utility-scale facilities. Governor Brown instead stated in that speech that:

> **"**I envision a wide range of initiatives: more distributed power, expanded rooftop solar, micro-grids, an energy imbalance market, battery storage, the full integration of

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[12] The whole point of the RPS is to reduce greenhouse gases, as per AB 32 (the "California Global Warming Solutions Act of 2006"). For this purpose, a kilowatt of rooftop solar is just as good as a kilowatt of utility-scale solar. Any purported justification for excluding anything behind the meter should be examined closely and with healthy skepticism. As we noted in the main text above, the CPUC is currently conducting proceedings bearing on the eligibility of differing generation sources for RPS status; we are cautiously optimistic that these viewpoints are being carefully considered.

AB 32 requires the California Air Resources Board to adopt rules and regulations to reduce greenhouse gas emissions to 1990 levels by 2020. AB 32, and its predecessor Executive Order S-3-05 (Statewide Greenhouse Gas Emission Targets), address emission reduction goals, and do not mandate that new renewable energy generation be provided by utility-scale plants. Thus they cannot be validly cited as "mandates" justifying a single-minded reliance on utility-scale energy generation and transmission.

information technology, and electrical distribution and millions of electric and low-carbon vehicles."

Hence the true vision behind the new 50% RPS goal, which has become law as a result of the recent enactment of SB 350, is one that looks to a sustainable energy future built on DG, such as rooftop solar and micro-grids, and fast-developing technological innovation, rather than utility-scale. That is the approach that should be embraced in RETI 2.0.

In short, RETI 2.0 should not look at the siting of utility-scale and related transmission projects in our un-built environment – our deserts, mountains and valleys -- as being inevitable. Rather, such projects should, if allowed at all, be treated as a last resort, because they have so many negative impacts on our State's people and environment.

Whatever the faults of the current system, the CPUC is governed by a hard and fast set of questions -- whenever new transmission infrastructure is proposed – about whether the proposed project would suit the public convenience and is necessary. When this set of questions was applied to the proposed Coolwater-Lugo transmission project, the PUC quite rightly rejected it. RETI 2.0 should not be ready to throw these hard and fast questions out the window in favor of promoting "landscape-level" planning aimed at achieving the State's RPS and GHG goals.

Thus RETI 2.0 has the opportunity to take a clear-eyed look at the technological and economic trends toward reducing GHG using DG, battery storage and energy efficiency.

8. Because Energy Technology and Economics Are Changing So Rapidly, the RETI 2.0 Should Proceed Slowly and Deliberately.

It is worth considering the enormous problems that the "rust belt" cities were stuck with when rapidly changing technologies and business models left their industries behind. That is where the state stands today when it comes to energy. Unlike the "rust belt" cities, we have advance warning, and the opportunity to avoid a similar fate.

According to the above-cited 2015 survey of over 400 utility executives, utility companies are moving away from the traditional vertically integrated model toward a more distributed, service-based model. These executives point to emerging technologies, shifting consumer expectations, and new energy economics. Our regulators agree, so much so that, according to the California Energy Commission's Distributed Generation Strategic Plan, "[w]e are at the threshold of reinventing the electric power system."

In view of the sweeping change in the energy economy, we would propose that RETI 2.0 allow itself the flexibility to proceed slowly, cautiously and quite restrictively when it comes to industrial-scale and transmission projects. This would allow RETI 2.0 to keep its finger on the pulse of energy trends and to adjust the plan in the face of them. Gradual phase-in and flexibility should be the order of the day.

At the initial phase, RETI 2.0 should carefully limit new utility-scale energy generation and transmission. At the next phase – perhaps three to five years down the line – RETI 2.0 (or 3.0) could take another look at the market for such projects and, if need be, there could be an appropriate adjustment of restrictions. In this phased fashion, only the least sensitive areas of the State would need to be sacrificed.

Why adopt a phased approach? Because we can only ratchet in one direction. Once an acre of land is scraped in order to site a new transmission facility, the damage persists indefinitely for all practical purposes.

The EPA, in its February 25, 2015 comment letter regarding the DRECP, recommended a phased approach for implementation of the DRECP, noting that it should – on a regular basis -- "[u]pdate the evaluation of the amount of renewable energy that may need to be produced in the Plan Area by 2040 to meet State of California and federal renewable energy goals, in light of the market and policy developments discussed above." RETI 2.0 would benefit by taking heed of this very sound advice.

9. RETI 2.0 Must Harness and Actively Encourage Robust Input From the People Whose Lives Would Be Directly Impacted, the People Who Live, Work and Recreate in Our Mountains, Deserts and Valleys.

If RETI 2.0 relies on a small stakeholder group and steering committee, particularly one made up of the IOUs and a sampling of large environmental advocacy groups, it will be unable to appreciate the full spectrum of environmental and social costs involved, especially at the local level. Only a portion of these costs have been highlighted in this letter.

RETI 2.0 cannot afford to make the same mistakes as the DRECP, which, at least in the most current version made available to the public, put too much emphasis on utility-scale renewables and not enough attention on the people affected most, and ignored the technology changes that are making utility-scale obsolete and the shift to distributed generation, battery storage and energy efficiency.

Because of these flaws, there was overwhelming public opposition to the DRECP, which is now, in its Phase II, to cover BLM land only. We were pleased to hear, at the Joint Agency Workshop, an emphasis on building consensus through a strong stakeholder dialogue.

In short, RETI 2.0 must become the open, inclusive and consensus-building process described at the Joint Agency Workshop. As one panel member stated, because prescribing certain outcomes is not normal in land use planning and because complex political, technological and environmental landscapes are involved, a broad spectrum of participants must be invited to the table and their input should be received with an open and informed perspective.

10. <u>Conclusion</u>.

Utility-scale renewable energy and transmission are not favorable uses for this State. We urge that RETI 2.0 guide development toward energy uses that are enlightened, modern, and genuinely a benefit to the people of this State.

We greatly appreciate your time in considering all of the foregoing, and we look forward to a vigorous and productive engagement in the RETI 2.0 process.

Very truly yours,

<u>Community Associations, Businesses and Organizations</u>:

OAK HILLS PROPERTY OWNERS ASSOCIATION

Terry Kostak, President

LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION

Chuck Bell, President

JOHNSON VALLEY IMPROVEMENT ASSOCIATION

Betty Munson, Acting Secretary

HOMESTEAD VALLEY COMMUNITY COUNCIL

Joanna Wright, President

MORONGO BASIN CONSERVATION ASSOCIATION

Sarah Kennington, President

MOJAVE DESERT RESOURCE CONSERVATION DISTRICT

Paul Johnson, Vice Chair

TOURISM ECONOMICS COMMISSION

Paul F. Smith, Chair

LUCERNE VALLEY MARKET/ HARDWARE

Linda Gommel, Chief Executive Officer

BASIN AND RANGE WATCH

Kevin Emmerich, President

CALIFORNIA DESERT COALITION

Ruth Rieman, Vice-Chair

DESERT PROTECTIVE COUNCIL

Terry Weiner, Projects and Conservation Coordinator

ALLIANCE FOR DESERT PRESERVATION

Richard Ravana, President

MOJAVE COMMUNITIES CONSERVATION COLLABORATIVE

Lorrie L. Steely, Founder

FRIENDS OF THE BIG MORONGO CANYON PRESERVE

Dave Miller, President, Board of Directors

AMARGOSA CONSERVANCY

Patrick Donnelly, Executive Director

29 PALMS INN

Jane Grunt Smith, Owner

THE SUMMER TREE INSTITUTE

Robin Kobaly, Executive Director

PROTECT OUR COMMUNITIES FOUNDATION

Denis Trafecanty, President

DESERT TORTOISE COUNCIL

Edward L. LaRue, Jr., Ecosystems Advisory Committee Chair

Individuals:

Brian Hammer, Analyst and Adjunct Professor (resident of Adelanto)

Marina D. West (resident of Landers)

John Smith (resident of Apple Valley)

Pat Flanagan (resident of Twentynine Palms)

Bill Lembright (resident of Lucerne Valley)

Mildred M. Rader (Lucerne Valley)

Jenny Wilder (resident of Apple Valley)

Chris Carillo (business owner in Redlands)

David Mueller (resident of Apple Valley)

Bill Powers, P.E. (resident of San Diego)

Tom Budlong (resident of Los Angeles)

Neville Slade (resident of Apple Valley)

cc: Governor Edmund G. Brown, Jr. (by email: govnews@ca.gov)
Sen. Kevin de Leon, Senate President pro tempore (by email to consultant: Kip.Lipper@sen.ca.gov)
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ATTACHMENT

SC WILDLANDS FEBRUARY 23, 2015 COMMENTS ON DRAFT EIR/EIS FOR THE DRECP

SC Wildlands
Science & Collaboration for Connected Wildlands
P.O. Box 1052, Fair Oaks, CA 95628
(877) Wildland www.scwildlands.org

Via email only February 23, 2015

California Energy Commission
Dockets Office, MS-4, Docket No. 09-RENEW EO-01
1516 Ninth Street
Sacramento, CA 95814-5512
docket@energy.ca.gov

RE: SC Wildlands' comments on the Draft EIR/EIS for the DRECP

SC Wildlands' mission is to protect and restore systems of connected wildlands that support native species and the ecosystems upon which they rely. SC Wildlands was engaged by the Alliance for Desert Preservation to review, critique and comment on the DRECP and to make recommendations for improvements to the Reserve Design specifically in the Pinto Lucerne Valley and Eastern Slopes Ecoregion. Comments herein are focused on the Preferred Alternative.

Enhancing connectivity and linking natural landscapes has been identified as the single most important adaptation strategy to conserve biodiversity during climate change (Heller and Zavaleta 2009). All of California's climate adaptation strategies (CNRA 2009, 2014), frameworks (Gov. Brown, CEPA, ARB 2014), and action plans (CDFG 2011; CNRA, CDFA, CEPA 2014) identify maintaining connectivity as one of the most important adaptation strategies to conserve biodiversity and support ecological functions during climate change, with statutory authority and legislative intent found in AB 2785 (2008).

Meeting renewable energy production goals is essential to help combat climate change, but the vast scale of Development Focus Areas (DFA) being proposed for renewable energy developments in the California deserts are likely to impact habitat connectivity, alter essential ecosystem functions, and eliminate opportunities for species to shift their ranges in response to climate change. The potential impacts, specifically to wildlife and their ability to move across the landscape, are enormous. Strategically conserving and restoring functional connections between habitat areas is an effective countermeasure to the adverse effects of habitat loss and fragmentation, and it is an essential mitigation measure for climate change.

A Linkage Network for the California Deserts (Penrod et al. 2012), commissioned by the Bureau of Land Management and The Wildlands Conservancy, was intended to provide more information to natural resource agencies and the general public concerning where and how to maintain connectivity and sustain ecological functions in a changing climate. The study area encompassed the entire DRECP planning area with a buffer into the neighboring Sierra Nevada and South Coast Ecoregions. The Desert Linkage Network was designed to help meet the following Biological Goals and Objectives of the DRECP "*At the landscape-level, the Plan-wide*

BGOs address creating a DRECP-wide, connected, landscape-scale reserve system consisting of large habitat blocks of all constituent natural communities. The reserve system maintains ecological integrity, ecosystem function and biological diversity, maintains natural patterns of genetic diversity, allows adaptation to changing conditions (including activities that are not covered by the Plan), and includes temperature and precipitation gradients, elevation gradients, and a diversity of geological facets to accommodate range contractions and expansions of species adapting to climate change".

The Desert Linkage Network (Penrod et al. 2012) was developed in part based on the habitat and movement requirements of 44 different focal species (Table 1) that are sensitive to habitat loss and fragmentation. These focal species were selected to represent a diversity of ecological interactions and are intended to serve as an umbrella for all native species and ecological processes of interest in the region. These 44 focal species capture a diversity of movement needs and ecological requirements and include area-sensitive species, barrier-sensitive species, less mobile species or corridor-dwellers, habitat specialists, and ecological indicator species. Seven of these focal species are also Covered Species under the DRECP, including Bighorn sheep, Mohave ground squirrel, pallid bat, burrowing owl, Bendire's thrasher, desert tortoise and Mojave fringe-toed lizard, and 3 of these species (bighorn sheep, desert tortoise and Mohave ground squirrel) were also used as "Reserve Drivers".

In addition to linkages designed for focal species, the Desert Linkage Network (Penrod et al. 2012) was also designed to be robust to climate change. As climate changes the focal species' distributions and the land cover map is likely to change; indeed it is likely that many land cover types (vegetation communities) will cease to exist as the plant species that define today's vegetation communities shift their geographic ranges in idiosyncratic ways (Hunter et al. 1988). We used the land facet

Table 1. Desert Linkage Network Focal Species (Penrod et al. 2012)

Mammals	
Mountain lion	*Puma concolor*
Badger	*Taxidea taxus*
Kit fox	*Vulpes macrotis*
Bighorn sheep	*Ovis canadensis*
Mule deer	*Odocoileus hemionus*
Ringtail	*Bassariscus astutus*
Mojave ground squirrel	*Spermophilus mohavensis*
Round-tailed ground squirrel	*Spermophilus tereticaudus*
Desert pocket mouse	*Chaetodipus penicillatus*
Little pocket mouse	*Perognathus longimembris*
Southern grasshopper mouse	*Onychomys torridus*
Pallid Bat	*Antrozus pallidus*
Birds	
Burrowing owl	*Athene cunicularia*
Loggerhead shrike	*Lanius ludovicianus*
Cactus wren	*Campylorhynchus brunneicapillus*
Black-tailed gnatcatcher	*Polioptila melanura*
LeConte's thrasher	*Toxostoma lecontei*
Bendire's thrasher	*Toxostoma bendirei*
Crissal thrasher	*Toxostoma crissale*
Greater roadrunner	*Geococcyx californianus*
Herpetofauna	
Desert Tortoise	*Gopherus agassizii*
Chuckwalla	*Sauromalus obesus obesus*
Rosy boa	*Lichanura trivirgata*
Speckled rattlesnake	*Crotalus mitchellii*
Mojave rattlesnake	*Crotalus scutulatus*
Mojave fringe-toed lizard	*Uma scoparia*
Collared lizard	*Crotaphytus bicinctores*
Desert spiny lizard	*Sceloperus magister*
Desert night lizard	*Xantusia vigilis*
Red spotted toad	*Anaxyrus punctatus*
Plants	
Joshua tree	*Yucca brevifolia*
Blackbrush	*Coleogyne ramosissima*
Desert willow	*Chilopsis linearis*
Arrowweed	*Pluchea sericea*
Cat claw acacia	*Acacia greggii*
Mesquite	*Prosopis glandulosa*
Mojave yucca	*Yucca schidigera*
Big galleta grass	*Pleuraphis rigida*
Paperbag bush	*Salazaria mexicana*
Invertebrates	
Yucca moth	*Tegeticula synthetica*
Desert green hairstreak	*Callophrys comstocki*
Bernardino dotted blue	*Euphilotes bernardino*
Desert ("Sonoran") metalmark	*Apodemia mejicanus*
Ford's swallowtail	*Papilo indra fordi*

approach (Brost and Beier 2010) to design climate-robust linkages. A land facet linkage consists of a corridor for each land facet, plus a corridor for high diversity of land facets. Each land facet corridor is intended to support occupancy and between-block movement by species associated with that land facet in periods of climate quasi-equilibrium. The high-diversity corridor is intended to support short distance shifts (e.g. from low to high elevation), species turnover, and other ecological processes relying on interaction between species and environments. The focal species linkages and land facet linkages were combined and then refined (e.g., adding riparian connections, removing redundant strands) to delineate the final Desert Linkage Network.

Table 2. Land Ownership in the Linkage Network (Penrod et al. 2012)	Acres
Bureau of Land Management	2,663,847
Department of Defense	366,394
National Park Service	109,475
California State Lands Commission	82,517
California Department of Fish and Game	19,664
United States Fish and Wildlife Service	16,322
The Wildlands Conservancy	13,894
California Department of Parks and Recreation	9,943
United States Forest Service	8,801
Special Districts	3,230
Other Federal	2,148
Cities	1,076
Friends of the Desert Mountains	818
Riverside Land Conservancy	313
Counties	242
Private Lands	930,500
Total Desert Linkage Network	4,229,184

The Desert Linkage Network encompasses 4,229,184 acres. At the time the report was released in 2012, approximately 68% (2,932,291 acres) of the linkage network enjoyed some level of conservation protection (Table 2) mostly in land overseen by the Bureau of Land Management, National Park Service, California State Lands Commission, California Department of Fish and Wildlife, US Fish and Wildlife Service, and The Wildlands Conservancy. An additional 9% (366,394 ac) of the Linkage Network is administered by the Department of Defense, providing some level of conservation for these lands, though not included in DRECP. Thus, the Linkage Network includes substantial (78%) public ownership under the No Action Alternative.

We applaud the DRECP for delineating 1,804,000 acres of the Desert Linkage Network as BLM LUPA Conservation Designations (ACEC, NLCS, or Wildlife Allocation; Table IV.7-71) under the Preferred Alternative, which together with the Existing Conservation Areas and Conservation Planning Areas, would conserve 71% (2,612,000 acres) of Total Available Lands (3,682,000) in the Desert Linkage Network. However, we firmly believe that the other 1,070,000 acres of the Desert Linkage Network is essential to achieving **Goal L1: "**Create a Plan-wide reserve design consisting of a mosaic of natural communities with habitat linkages that is adaptive to changing conditions and includes temperature and precipitation gradients, elevation gradients, and a diversity of geological facets that provide for movement and gene flow and accommodate range shifts and expansions in response to climate change".

The first page of the Executive Summary uses the word "transparent" to describe the DRECP's approach but the document is chock full of black box assumptions and analyses that fail to fully and accurately disclose impacts. Section I.3.4.4.3 says, "the reserve design envelope was developed from a systematic and objective approach (Margules and Pressey 2000; Carroll et al.

2003; Moilanen et al. 2009) using several independent methods that were iteratively evaluated and refined". The Evaluation and Refinement is described as "exhaustive interactive GIS comparisons in collaborative mapping sessions," which isn't too terribly systematic or objective. This section also says that, "Important areas for desert tortoise, Mohave ground squirrel, and bighorn sheep were based on REAT agency interpretations of the species distribution models and recent occurrence data for these species, which correspond to the BGOs for these species"; also not systematic or objective, especially since most occurrence data is gathered when developments are proposed and thus cover only a portion of these species ranges. This section also says that "quantitative GIS analyses were conducted periodically throughout the evaluation and refinement process to quantitatively track and assess the capture of the species, natural communities, and landscape elements/processes". In order to fully and accurately disclose impacts, the actual results of those GIS analyses should be in Volume IV rather than after the results have been put through the mysterious acreage calculator.

The Impact Analyses and reported acreages are completely nebulous. As described in Section IV.7.1.1, "the reported impact acreage (e.g., acres of impact to natural communities or Covered Species habitat) is based on the overlap of the DFAs and the resource (e.g., mapped natural community or modeled Covered Species habitat) times the proportion of the impacts from Covered Activity development anticipated with the DFA". The results of the impact analyses are reported in an onerous number of tables with relatively meaningless acreages based on assumptions about proportions of DFAs that will actually be impacted. There are NO maps showing the overlap of the DFA's and the resource (e.g., mapped natural community or modeled Covered Species habitat). In Volume IV: Environmental Consequences/Effects Analysis, Section IV.07 Biological Resources, there is only ONE Figure, Figure IV.7-1 Subunits, in the entire section. While there is a whopping total of 311 tables associated with this same section, Tables IV.7-1 through IV.7-311. These 311 tables slice and dice the "Conservation Analyses" and "Impact Analyses" in various ways, generally starting with Plan-Wide and then breaking it down by BLM LUPA, NCCP, GCP, Subregions, Covered Species, etc. The various Conservation Analysis tables report actual acreages while the Impact Analysis tables report Total Impact Acres generated by the mysterious black box. For example, the Plan Wide Preferred Alternative includes 2,024,000 acres of DFAs and transmission corridors but says only about 177,000 acres will actually be impacted. Nowhere does the document report actual acreages of how the 2,024,000 acres of DFAs and transmission corridors in the Preferred Alternative overlap for example, habitat for the 37 Covered Species or the Desert Linkage Network. Instead, all of the impact analysis tables associated with the Preferred Alternative relate to the 177,000 acres of reported "Total Impact Acreage". All tables in Volume IV should add a column to report actual acreage of DFA overlap with resources alongside the reported "Total Impact Acreages". Maps must be included to show where the DFAs coincide with these resources. And, please do not answer in the Response to Comments that the Data Basin Gateway is serving this purpose; it is an excellent supplemental resource but should not replace basic disclosure of impacts. As currently written, the DRECP approach to impact analysis is anything but transparent.

Section I.3.4.4.3 says the Desert Linkage Network was one of several inputs to a focal species, natural communities, and processes approach, which created "an initial reserve design envelope using better information with less uncertainty". Section I.3.4.4.3 (I.3-26) Reserve Design Methods and Appendix D, D.3.6., refers to a composite map of KEY covered species, natural

communities and processes as "reserve drivers" (i.e., desert tortoise, Mohave ground squirrel, bighorn sheep, microphyll woodland, dunes and sand resources, flat-tailed horned lizard, hydrologic features, and West Mojave corridors, rare natural communities, and environmental gradients), which were selected because they are "*important to the overall DRECP conservation strategy and generally occur across a range of ecoregion subareas and habitats of the Plan Area, such that conserving the areas important for the reserve drivers would also conserve areas important for the other Covered Species and natural communities*". There is no figure for this "Composite Map of Key Reserve Drivers" in the document and it is NOT one of the 500+ data layers available for public review on the Data Basin Gateway. While it is clear from ES Figure 5 that landscape connectivity was one of the reserve drivers for many of the conservation designations, Table D-2 in Appendix D Reserve Design Development Process and Methods, indicates that the data generated by Penrod et al. (2012) was only used as a "Reserve Driver" in the Western Mojave, which is ironic because the Western Mojave is particularly hard hit with DFAs that could sever connectivity or significantly reduce functional habitat connectivity.

The 37 Covered Species were selected (Appendix B) because they are ALL "important to the overall DRECP conservation strategy. How well do the "Reserve Drivers" (I.3.4.4.3 Reserve Design Methods and Appendix D, D.3.6) capture modeled habitat for all of the "Covered Species"? A quick review of the species distribution models in relation to the Development Focus Areas (DFA) show that several covered species are NOT so well covered by the Key Reserve Drivers (e.g., gila woodpecker, greater sandhill crane, mountain plover, tricolored blackbird, Swainson's hawk, willow flycatcher, Yuma clapper rail, Alkali mariposa lily). For example, a quick GIS analysis for tricolored blackbird revealed that 60% of its habitat falls within DFAs. Further, another 9% of the tricolored blackbird modeled habitat is Undesignated and available for "disposal (Table 3). This analysis did not even factor in transmission lines. Maps should be included for each of the 37 Covered Species showing their modeled habitat, recorded occurrences and when applicable designated critical habitat in relation to DFAs, FAAs,

Table 3. Tricolored blackbird habitat overlap with integrated Preferred Alternative

Designation - Preferred Alt Integrated	**Acres**	**%**
BLM ACECs	7,910.17	3%
BLM ACECs and NLCS	2,243.56	1%
BLM Wildlife Allocation	2,694.56	1%
Conservation Planning Areas	47,566.51	17%
Development Focus Areas	***165,526.27***	***60%***
Future Assessment Areas	114.79	0%
Impervious and Urban Built-up Land	8,361.00	3%
Legislatively and Legally Protected Areas	11,525.35	4%
Military	6,597.31	2%
Military Expansion Mitigation Lands	133.95	0%
Open OHV Areas	34.64	0%
Tribal Lands	40.09	0%
Undesignated	25,125.55	9%
Total Modeled Tricolored Blackbird Habitat	**277,873.76**	**100%**

SAAs, and Undesignated land. This is the type of disclosure of impacts this is required under the legal framework provided under 1.2. Currently, the only maps for ALL 37 Covered Species are buried in Appendix C to Appendix Q, *Baseline Biology Report.* All 37 Covered Species should be Reserve Drivers.

Currently, Table IV.7-47 Plan-Wide Impact Analysis for Covered Species Habitat – Preferred Alternative is the closest the Plan gets to disclosing impacts to ALL of the 37 Covered Species. The tricolored blackbird analysis above shows 60% (165,526 acres) of the species habitat falls within DFAs, while Table IV. 7-47 reports only 8,000 acres of Total Impact for this species. There is NO reason why both of these acreages cannot be reported in Table IV.7-47. Table IV.7-57, Plan-Wide Conservation Analysis for Covered Species Habitat – Preferred Alternative is the closest the Plan gets to disclosing how poorly the 37 Covered Species are actually covered by the plan - only 19 of the 37 species have 50% or more or their habitat conserved under the Preferred Alternative. Not even all of the Reserve Drivers are very well "Covered" by the Preferred Alternative. Which begs the question – how well does the reserve design capture the needs of the 123 "Non-Covered" special status species?

I.3.4.4.5 DRECP Plan-Wide Reserve Design Envelope for Each Alternative

The following standards and criteria were used to develop the Interagency Plan-Wide Conservation Priority Areas (and Conceptual Plan-Wide NCCP Reserve Design):
- Conserve important habitat areas that also provide habitat linkages for the movement and interchange of organisms within the Plan Area and to areas outside the Plan Area.
  - o Important habitat linkage areas were included in the NCCP Conceptual Plan-Wide Reserve Design using species-specific linkage information for key Covered Species, including desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), and desert bighorn sheep (*Ovis canadensis nelsoni*).
  - o Landscape-scale, multispecies habitat linkage information was used to identify movement corridors between habitat blocks inside and outside the Plan Area.
  - o Species-specific threats and stressor information was incorporated to identify the linkage areas critical for inclusion in the NCCP Conceptual Plan-Wide Reserve Design.

One of the DRECP Planning Goals in section 1.2 of the Executive Summary is to "Preserve, **restore**, and enhance natural communities and ecosystems including those that support Covered Species within the Plan Area". However, it appears that several "fuzzy logic" models of intactness were the primary drivers used to identify the DFAs, regardless of whether the DFAs make up the majority of a given Covered Species habitat. "*In order to minimize habitat fragmentation and population isolation, DFAs were sited in less intact and more degraded areas. Based on the terrestrial intactness analysis developed for the DRECP area, approximately 87% of the DFAs in the Preferred Alternative are characterized by low or moderately low intactness. Therefore, a majority of the DFAs are in locations with existing habitat fragmentation and population isolation such that development of Covered Activities in these areas would not appreciably contribute to additional effects".* Yet, habitat loss and fragmentation is precisely why many of the 37 Covered Species and 123 Non-Covered Species are listed as threatened, endangered or sensitive in the first place!

The California Desert Connectivity Project (Penrod et al. 2012) is briefly described in III.7.7-246. This is the ONLY place in the entire document that refers to "23 crucial linkage planning areas within the Plan Area". Actually, there were 22 linkage planning areas but nowhere are these crucial linkages actually identified by name. And nowhere are the 22 crucial linkages actually analyzed by linkage. Instead, baseline conditions of the Desert Linkage Network and impacts to the linkage network are analyzed by Ecoregion Subareas, which is relatively meaningless in the context of landscape connectivity since several of the linkages span more than one Ecoregion Subarea. Further, Figures III.7-26 through 7-36 do not label any of the Landscape Blocks intended to be served by the 22 crucial linkages. The discussion in Vol. III Pages 7-248 through 7-271 provides virtually NO information beyond what is already summarized in Tables III.7-69, 7-82, and 7-96 other than vague geographical references, like "providing connectivity between mountain ranges within the ecoregion subarea". Of particular note, is that none of the targeted Landscape Blocks outside of the Plan Area (e.g., Sierra Nevada, San Gabriel Mountains, San Bernardino Mountains) are labeled or depicted in Figure III.7-26 or in the subareas maps, or in any other maps in the entire document. Yet, several areas of the DRECP refer to the importance of maintaining connectivity beyond the Plan boundary. The DRECP repeatedly refers readers to Penrod et al. 2012 but that document was analyzed and organized by linkage not Ecoregion Subareas, so it is impossible to evaluate and compare baseline conditions or impacts as described in the DRECP to the Desert Linkage Network.

The ENTIRE Section, III.7.8 Landscape Habitat Linkages and Wildlife Movement Corridors (III.7 7-245 to 7-248), is VERBATIM to what is provided in Appendix Q on this topic. There is a serious overuse of the Copy/Paste function throughout the document. Typically, an Appendix provides the reader with more relevant information related to the topic being discussed, beyond just the literature cited section. This section of the DRECP alone refers to Appendix Q 23 times! Why not just include the references within the section and consolidate the numerous literature cited sections?

The Preferred Alternative estimates a Plan-Wide Total Impact Area for the Desert Linkage Network of 28,000 acres (Table IV. 7-52) based on the overlap of the DFAs with the Desert Linkage Network times the proportion of the impacts from Covered Activity development anticipated with the DFA (IV.7-263). However, based on a GIS analysis of the overlap of the Integrated Preferred Alternative with the Desert Linkage Network, the actual acreage of the DFAs that overlap the Desert Linkage Network is 205,650 acres – which must be disclosed! There is also an additional 198,177 acres in the Linkage Network identified as Undesignated in the Preferred Alternative. Undesignated areas are described in the glossary as *BLM-administered lands that do not have an existing or proposed land allocation or designation. These areas would be open to renewable energy applications but would not benefit from the streamlining or CMA certainty of the DFAs.* Page II.3-381 under II.3.2.3.4.2 states: "In non-designated lands (i.e. lands not covered by the specific CMAs below), make lands available for disposal through exchange or land sale". Does this mean that nearly 200,000 acres of the Desert Linkage Network would be "available for disposal"? Shouldn't this be factored into the "Impact Analysis"? And fully disclosed in the Total Impact Acreage? Additionally, Future Assessment Areas cover 37,377 acres and Special Analysis Areas cover another 29,342 acres of the Desert Linkage Network. Between the DFAs, Undesignated, FAAs and SAAs areas, over 470,547 acres of the Desert Linkage Network could be open to renewable energy applications. There are NO maps that show

how the DFAs, FAAs, SAAs, Variance Lands, or Undesignated Lands in the Preferred Alternative coincide with the Desert Linkage Network, not to mention transmission corridors! Volume IV is the **Environmental Consequences / Affects Analysis** yet this section repeatedly refers to maps in Volume III, "Affected Environment Figures III.7-26 through III.7-36 in Chapter III.7 of Volume III shows the desert linkage network for the Plan Area and in each ecoregion subarea". Maps must be included in Vol. IV for the entire Desert Linkage Network and each of the six subareas that would be impacted. As Figure 1 shows, several linkages are completely severed or severely constrained by DFAs, FAAs and Undesignated land.

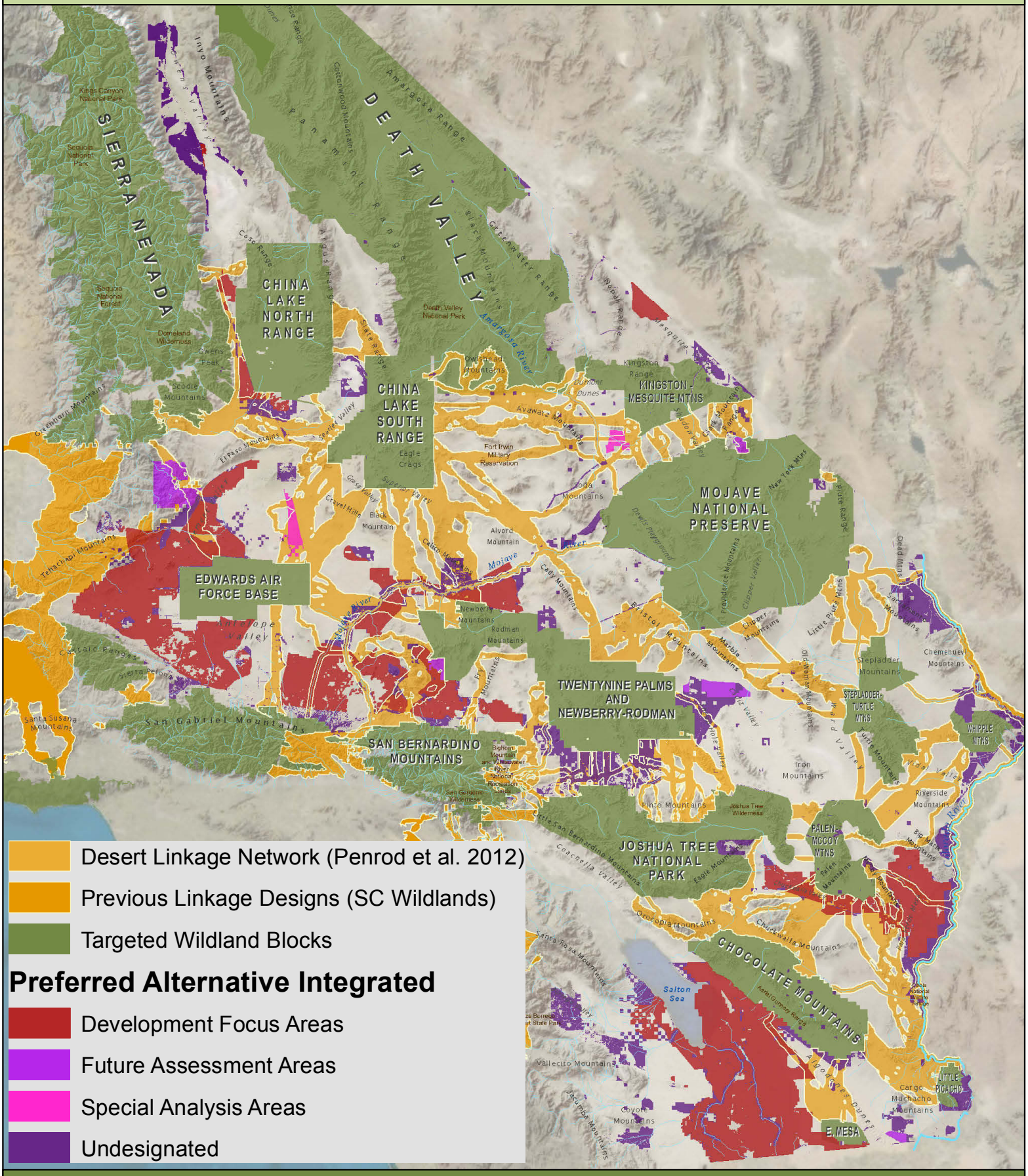
Undesignated Lands: II.3-9 Table II.3-1 Interagency DRECP Plan-Wide Preferred Alternative identifies 1,323,000 acres of Undesignated lands (i.e., BLM Unallocated Land), 709,000 acres of which is within BLM LUPA (Table II.3-42). This 1.3 million acres of BLM land is NOT clearly depicted in FIGURE II.3-1 Interagency Preferred Alternative but instead appears to be lumped with Impervious and Urban Built-up Land (5,547,000 acres in Table II.3-1), which the legend describes as "Existing Developed Areas". This is EXTREMELY misleading. These Undesignated lands overlap several areas of high conservation value, including but not limited to habitat for Covered Species, "Reserve Drivers" (e.g., bighorn sheep mountain habitat, bighorn sheep intermountain habitat, desert tortoise intact habitat and fragmented habitat in the Desert Tortoise TCA Habitat Linkages), and numerous areas of the Desert Linkage Network. Further, while much of the Mojave River itself is designated as Conservation Planning Areas in the Preferred Alternative, Undesignated lands or DFAs are located in the uplands along most of the Mojave River. II.3-381 One of the bullets under II.3.2.3.4.2 Conservation and Management Actions states: "In non-designated lands (i.e. lands not covered by the specific CMAs below), make lands available for disposal through exchange or land sale". Is Undesignated, BLM Unallocated and "non-designated lands" synonymous? Does this mean that over 1.3 million acres of existing public land administered by BLM will be available for "disposal"? Where is the impact analysis regarding these lands?

There is no mention of Undesignated, BLM Unallocated, or Non-designated lands in Volume III Environmental Setting/Affected Environment, not in III.13 BLM Lands and Realty - Land Use Authorizations and Land Tenure or III.7 Biological Resources. This is a serious oversight that must be addressed. IV.7-281 is the only place that mentions Undesignated Areas, "*Approximately 471,000 acres were not designated as Reserve Design Lands under the Preferred Alternative that were identified in the conceptual reserve envelope, which is primarily comprised of BLM-administered lands in the Plan Area without BLM LUPA conservation designations over them*". What about the other 852,000 acres of Undesignated lands mentioned in Table II.3-1? IV.13 only mentions Undesignated Lands in reference to FAA, SAA, and DRECP Variance lands but Undesignated Lands cover a far greater area than what is included in these designations. Maps must be included in Volumes III and IV that clearly depict ALL Undesignated lands.

The entire discussion describing the six different subareas of the Desert Linkage Network that "could be adversely impacted in DFAs and transmission corridors" is inadequate (IV.7-264 and 7-265). Each subarea is allocated one poorly written paragraph that vaguely describes impacts, e.g., "there are DFAs in a portion of the desert linkage network". Impacts should be analyzed and described in reference to the 22 crucial linkages delineated by Penrod et al. (2012) and further

CALIFORNIA DESERT CONNECTIVITY PROJECT

Figure 1. Desert Linkage Network Conflicts



N

1:2,138,961

0 25 50 75 Kilometers

0 30 60 Miles

SC Wildlands

evaluated by the focal species and land facet linkage networks, rather than ecoregional subareas. The DRECP should disclose where DFAs completely sever or significantly constrain a linkage, not just provide acreages and describe proportions of subareas. As the lead author in Penrod et al. (2012), I should not have difficulty deciphering the descriptions of impacts to the linkage network. Further, this entire discussion is meaningless without maps that include detailed annotation of all the areas referenced in the text. Lead biologists, Cartographers and Copy Editors should work together to ensure that geographical and locational references in the text are included on the maps (see bold type in following paragraph). Typically, zoomed in maps have more annotation. The maps must clearly and accurately show where DFAs, FAAs, SAAs, Variance Lands and Undesignated lands and Transmission Corridors coincide with the Desert Linkage Network.

This is an example of one of the six poorly written paragraphs allocated to discussing Plan-Wide conservation of and impacts to the Desert Linkage Network (IV.7-264), "*In the Pinto Lucerne Valley and Eastern Slopes subarea, there are DFAs in a portion of the desert linkage network that connects the **Grapevine Canyon Recreation Lands** to the **Granite Mountains** in Lucerne Valley; however, no DFAs are located in the habitat linkage between the **Ord Mountains** and the Granite Mountains across the Highway 18 east of **Apple Valley**. There are also DFAs in the linkage that connects **Black Mountain** to the **Mojave River**. DFAs under the Preferred Alternative are sited to avoid and minimize impacts to wildlife movement in this subarea by maintaining movement corridors between the **San Bernardino Mountains** and the Mojave Desert, including in the Ord Mountains to Granite Mountains linkage area and in the **Bighorn Mountain** area that connects to **Johnson Valley** and the **Morongo Basin**. General terrestrial wildlife movement may be affected locally by the development of Covered Activities in these DFAs; however, the siting of DFAs, the reserve design, and the CMAs related to wildlife movement and Covered Species would offset the impacts on general terrestrial wildlife movement".* The linkages in the Desert Linkage Network in the vicinity of the Apple Valley and Lucerne Valley DFAs are the Twentynine Palms Newberry Rodman-San Bernardino Connection and the Twentynine Palms Newberry Rodman-San Gabriel Connection (Penrod et al. 2012), incorrectly described above as "connects Grapevine Canyon Recreation Lands to the Granite Mountains in Lucerne Valley". These connections connect the San Bernardino and San Gabriel Mountains of the South Coast Ecoregion to the Newberry Rodman Mountains in the Mojave, not Grapevine Canyon to Granite Mountains, which is only a portion of those linkages. Then it says, "No DFAs are located in the habitat linkage between the Ord Mountains and the Granite Mountains" but the DRECP neglects to say that this linkage, which most closely resembles the San Bernardino-Granite Connection (Penrod et al. 2005) is entirely encompassed within the landscape level connection described in the first part of that sentence! Penrod et al. (2005) was a focal species based connectivity assessment and the Desert Linkage Network (Penrod et al. 2012) used improved methods to make the linkages robust to climate change (i.e., land facet analyses). As currently proposed, the Granite Mountain Corridor ACEC is not sufficiently wide to provide live-in and move-through habitat for the target species or support range shifts in response to climate change.

Disruption of landscape connections for species movements and range changes is one of the greatest stressors to ecosystems, especially under climate change. In order to achieve **Goal L1** - NO DFAs should be sited within the Desert linkage Network, desert tortoise linkages, bighorn

sheep intermountain habitat and Mohave ground squirrel linkages. All of these species-specific linkages and landscape linkages should automatically be included in the Reserve Design, either as ACEC, NLCS, Conservation Planning Areas, or SAAs. No Undesignated (i.e., BLM Unallocated) land within these linkages should be "disposed of" but should also be automatically included as ACEC, NLCS, SAAs, or Conservation Planning Areas in the Reserve Design.

Objective L1.1: Conserve Covered Species habitat, natural communities, and ecological processes of the Mojave and Sonoran deserts in each ecoregional subarea in the Plan Area in an interconnected DRECP reserve. COMMENT: Must include desert tortoise Ord-Rodman to Joshua Tree and Fremont Kramer Linkages.

Objective L1.2: Design landscape linkage corridors to be 3 miles wide where feasible, and at least 1.2 miles wide where a greater width is not feasible. COMMENT: Several landscape linkages designed by Penrod et al. 2012 are greater than 3 miles wide and viable. For instance, it is feasible and desirable to design a linkage more than 1.2 miles wide for the proposed Granite Mountain Wildlife Linkage ACEC with revisions to the Apple Valley and Lucerne Valley DFAs.

Objective L1.3: Protect and maintain the permeability of landscape connections between neighboring mountain ranges to allow passage of resident wildlife by protecting key movement corridors or reducing barriers to movement within intermountain connections, including:
o Chuckwalla-Little Chuckwalla-Palen connections
o Bristol-Marble-Ship-Old Woman connections
o Old Woman-Turtle-Whipple connections
o Bullion-Sheephole-Coxcomb connections
o Clark-Mesquite-Kingston connections
o Big Maria-Little Maria-McCoy connections
o Soda-Avawatz-Ord-Funeral connections
o Clark-Mesquite-Kingston-Nopah-Funeral connections
o Rosa-Vallecitos-Coyote connections
o Panamint-Argus connection
o Palo Verde-Mule-Little Chuckwalla connections
o Palo Verde-Mule-McCoy connections
o Chuckwalla-Eagle-Coxcomb connections
o Eagle-Granite-Palen-Little Maria connections
o Granite-Iron-Old Woman connections
o Big Maria-Little Maria-Turtle connections
o Northeast slope of the San Bernardino Mountains between Arrastre Creek and Furnace Canyon, including Arctic and Cushenbury canyons, Terrace and Jacoby springs, along Nelson Ridge. **COMMENT:** Why is this objective restricted to the list of "connections" above? The majority of the mountain ranges listed above are in the Eastern Mojave and Sonoran regions and therefore not consistent with creating a Plan-wide reserve design (Goal L1). These are not the landscape linkages identified in the Desert Linkage Network (Penrod et al. 2012), nor are they the desert tortoise linkages identified in Figure C-34. Where did this list come from? I did not see it referenced in the document.

Feature Landscape stressors and threats: Goal L3: Reduce, relative to existing conditions, adverse impacts from human activities to natural communities and Covered Species in the Plan Area.
Step-Down Biological Objective L3-A: Through the DRECP planning process, establish Development Focus Areas (DFAs) for Covered Activities in locations that would not disrupt or degrade the function of habitat linkages. COMMENT: Figure 1 clearly shows that DFAs would completely sever and disrupt and degrade the function of several linkages. Please see recommended revisions to the Reserve Design for the Pinto Lucerne Eastern Slopes below. I wish I had time to conduct this level of detailed review for the entire Desert Linkage Network!

H.2.3 Wildlife Linkages and Connectivity: Figures (H-1 & H-2) depict the wildlife linkages where Covered Activities will be configured to avoid and minimize adverse effects to wildlife connectivity and the function of the wildlife linkage. Figure H-2 Landscape-level Linkage CMA depicts the ENTIRE Desert Linkage Network and SCML Linkages that fall within the DRECP boundary and we wholeheartedly agree that Covered Activities should avoid and minimize impacts to these linkage. Figure H-2 is specifically referenced in the Section II.3.1.2.5.3, Landscape-Level Avoidance and Minimization CMAs, under the CMA **AM-LL-1**.

AM-LL-1: The siting of projects along the edges of the linkages identified in Appendix H (Figures H-1 and H-2) will be configured (1) to maximize the retention of microphyll woodlands and their constituent natural communities and inclusion of other physical and biological features conducive to species' dispersal, and (2) informed by existing available information on modeled Covered Species habitat and element occurrence data, mapped delineations of natural communities, and based on available empirical data collected under the MAMP or other sources, including radio telemetry, wildlife tracking sign, and road-kill information. Additionally, Covered Activities will be sited and designed to maintain the function of Covered Species connectivity and their associated habitats in the following linkage and connectivity areas:
o Within a 5-mile-wide linkage across Interstate 10 centered on Wiley's Well Road to connect the Mule and McCoy mountains.
o Within a 3-mile-wide linkage across Interstate 10 to connect the Chuckwalla and Palen mountains.
o Within a 1.5-mile-wide linkage across Interstate 10 to connect the Chuckwalla Mountains to the Chuckwalla Valley east of Desert Center.
o The confluence of Milpitas Wash and Colorado River floodplain within 2 miles of California State Route 78.
In addition to these specific landscape linkages identified above, the Riparian and Wetland Natural Communities and Covered Species CMAs will contribute to maintaining and promoting habitat connectivity and wildlife movement (see RIPWET under Section II.3.1.2.5.4). The Covered Species CMAs provide additional avoidance and minimization actions for important species-specific habitat linkages (see Section II.3.1.2.5.4).
The DFA configuration of the Preferred Alternative should avoid landscape linkages (Penrod et al. 2012) and species-specific linkages all together in order to minimize impacts to Covered Species under existing habitat conditions and provide ample landscape level connectivity in an uncertain climate. This CMA must be implemented throughout the Desert Linkage Network!

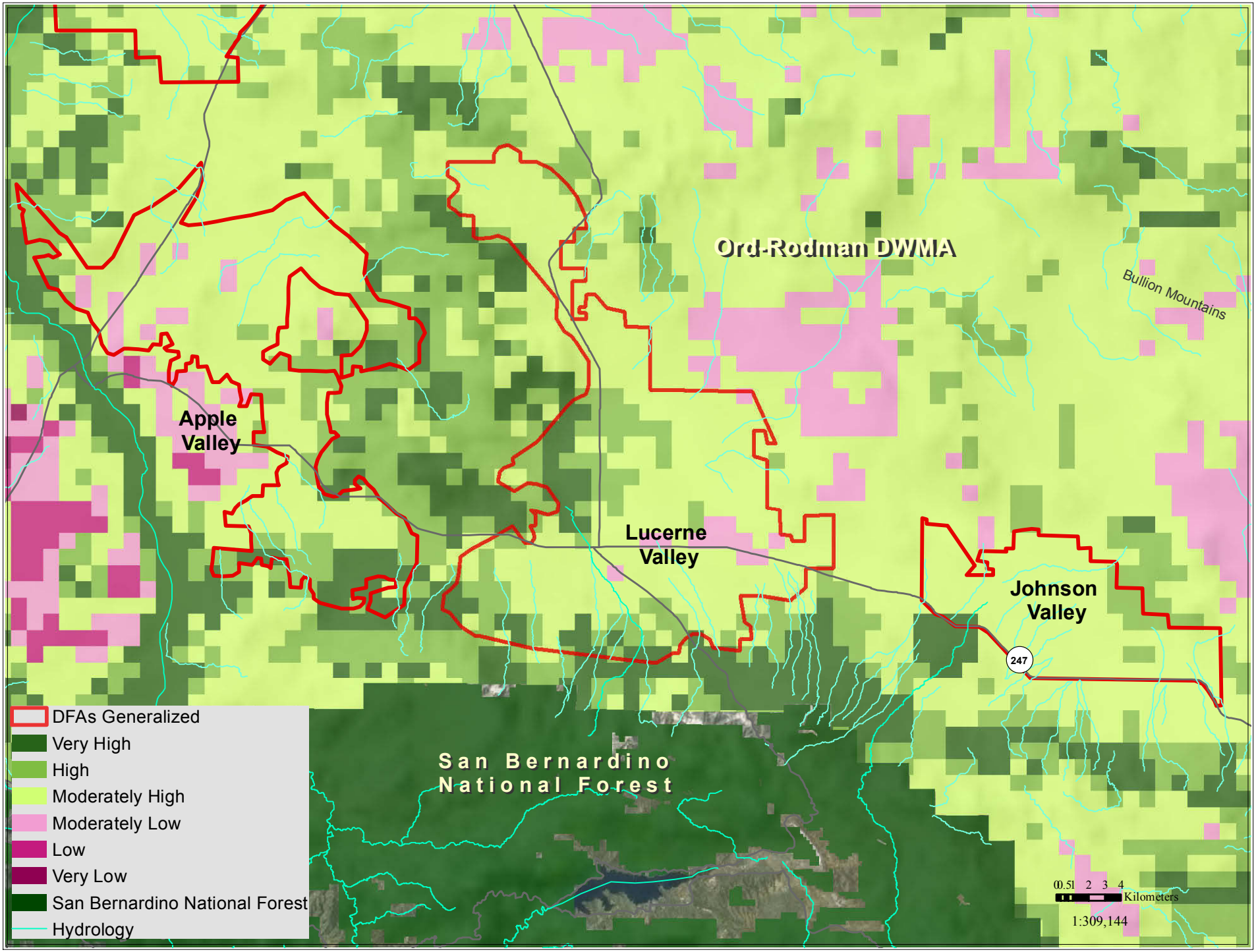
A Conservation Alternative for the Pinto Lucerne Valley and Eastern Slopes

Conservation Values are particularly high in the Pinto Lucerne Valley and Eastern Slopes Subarea along the Mojave River, through the linkage, and all along the slopes of the San Bernardino Mountains (Figure 2). The Conservation Values Model available on the Data Basin Gateway aggregated several biological themes including natural community diversity, rare species concentrations, concentrations of Covered Species modeled distributions, concentrations of Non-Covered Species modeled distributions, and relative quality of identified wildlife linkages. Virtually all of the proposed Apple Valley, Lucerne Valley and Johnson Valley DFAs scored Moderately High to Very High with very few pixels scoring Moderately Low and no pixels scoring Low or Very Low. Section (II.3, Page 347), describes the Pinto Lucerne Valley and Eastern Slopes Subarea as, "some of the most diverse and threatened habitats in the California desert".

The following section suggests refinements to the current designations in the Preferred Alternative for the Pinto Lucerne Valley and Eastern Slopes subarea and justification for these recommended improvements. As currently proposed the Reserve Design doesn't capture landscape linkages wide enough to support viable populations of the species they are intended to serve or the full diversity of land facets needed to make the linkages robust to climate change. Maintaining and restoring landscape level connectivity is essential to day-to-day movements of individuals seeking food and water, shelter or mates; dispersal of offspring to new home areas; seasonal migration; recolonization of unoccupied habitat after a local population goes extinct; and for species to shift their range in response to global climate change. Plant and animal distributions are predicted to shift (generally northwards or upwards in elevation in California) due to global warming (Field et al. 1999). Full shifts in vegetation communities are expected as a result of climate change (Notaro et al. 2012). The Pinto Lucerne Valley and Eastern Slopes Subarea "spans diverse landscapes of the south-central Mojave Desert and the San Bernardino Mountains, from 1,000 feet to over 6,000 feet in elevation". The northern slopes and foothills of the San Bernardino Mountains contain many springs and seeps, several riparian drainages, and the headwaters of the Mojave River. Riparian systems will be especially important to allow species to respond and adapt to climate change because they provide connectivity between habitats and across elevational zones (Seavy et al. 2009). Thus, linkages must be sufficiently wide to cover an ecologically meaningful range of elevations as well as a diversity of microhabitats that allow species to colonize new areas.

While the Mojave Riverbed itself is identified as a Conservation Planning Area for much of its length, virtually all of the uplands are proposed as either DFAs or Undesignated land that could be available for "disposal" The Mojave River flows from the South Coast Ecoregion through much of the Mojave Ecoregion. It is one of three major rivers in the desert and the only one that traverses from the West to the East Mojave, covering a distance of roughly 80 miles - it is a key wildlife movement corridor. The Mojave River is also essential habitat for several listed and sensitive species with portions of the river designated as critical habitat for southwestern willow flycatcher. According to the USFWS (1986), over 200 species of migratory birds have been recorded in the Mojave River, near the Mojave River Forks Dam Water Conservation Project. These hundreds of migratory bird species use the Mojave River, Deep Creek, mountain lakes, riparian drainages and seeps and springs throughout desert facing slopes of the San Bernardino

Figure 2. Coservation Values are High in the Pinto Lucerne Valley Eastern Slopes Ecoregion Subarea



and San Gabriel Ranges. No DFAs should be sited within the 500 year flood plain and all Undesignated areas along the Mojave River should be included in the Reserve Design to ensure wildlife have access to this essential resource, which will be even more indispensible with climate change.

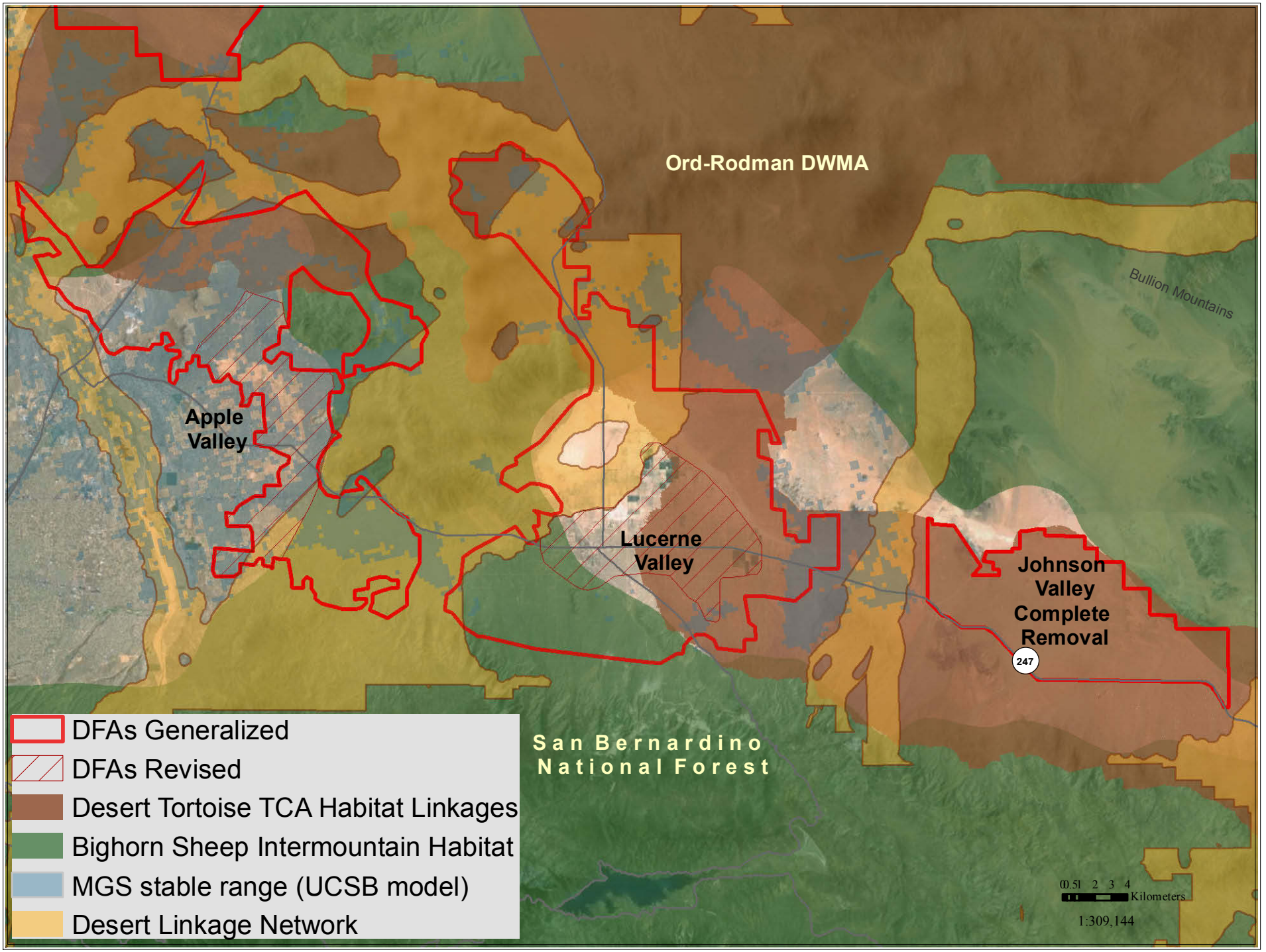
The hydrology of the northern slopes of the San Bernardino Mountains is not just an essential resource for the flora and fauna. It is also extremely important to recharging groundwater basins in Apple, Lucerne and Johnson Valleys. Massive renewable energy projects use enormous amounts of water both in construction and maintenance, which could further exacerbate already severely distressed overdraft conditions in these groundwater basins.

As currently proposed the Apple Valley, Lucerne Valley and Johnson Valley DFAs present significant conflicts with habitat and climate change connectivity for Reserve Drivers such as bighorn sheep, desert tortoise, Mojave fringe-toed lizard and the Desert Linkage Network, as well as several other Covered Species, in addition to 31of the 44 focal species addressed by Penrod et al. (2012). There is an approximately 7 mile wide Conservation Planning Area designated between the San Gabriel Mountains and Edwards Air Force Base (AFB), though Military lands are not specifically covered by the DRECP. The essential ecoregional connection between the south-central Mojave Desert and the San Bernardino Mountains (i.e., connectivity to areas outside the plan area) warrants the same consideration, especially since this linkage serves to connect vast areas with conservation designations (e.g., NLCS, ACEC and USFS). It is feasible and desirable to conserve functional landscape-level connectivity here.

Here we suggest refinements to the Apple Valley and Lucerne Valley DFAs and complete removal for the Johnson Valley DFA. We created our own Composite Map of Key Reserve Drivers, referred to but not provided in I.3.4.4.3 and Appendix D, D.3.6. The primary data used to create this composite map of Key Reserve Drivers include Desert Tortoise TCA and Linkages (Averill-Murray et al. 2013), Bighorn sheep mountain habitat and intermountain habitat (CDFW 2013), Mohave ground squirrel (Inman et al. 2013, UCSB 2013), and the Desert Linkage Network (Penrod et al. 2012), which were used to make proposed refinements to the Reserve Design (Figure 3). We queried the areas removed from the Apple Valley and Lucerne Valley DFAs and the Johnson Valley DFA using the Site Survey Composite for the Preferred Alternative (i.e., DRECP_Composite_Ecological _Basline_Preferred_Alternative_v5, GIS data downloaded from Data Basin) to identify other Covered Species that would benefit from the proposed changes to the Reserve Design (Table 4). In addition to providing essential habitat for these Reserve Drivers, several other Covered Species will benefit from these refinements including Bendire's thrasher, burrowing owl, golden eagle, Swainson's hawk, least Bell's vireo, southwestern willow flycatcher, yellow-billed cuckoo, tricolored blackbird, mountain plover, pallid bat, Townsend's big-eared bat, alkali mariposa lily, Little San Bernardino linanthus, Mojave monkeyflower, and Parish's daisy.

These refinements would benefit 18 of the Covered Species. According to the DRECP Composite Ecological Baseline, each pixel in the refinements to the Apple Valley DFA (573 pixels) benefit 4 to 11 Covered Species (MEAN 6.9 species), with a total species count of 3,959 in the 573 pixels. Each pixel in the refinements to the Lucerne Valley DFA (787 pixels) benefit 2 to 10 Covered Species (MEAN 6.45 species), with a total species count of 5,080 in the 787

Figure 3. Refinements to and Removal of DFAs in the Pinto Lucerne Valley and Eastern Slopes Subarea



pixels. Each pixel in the Johnson Valley DFA (428 pixels) benefit 4 to 7 Covered Species (MEAN 5.48 species), with a total species count of 2,346 in the 428 pixels.

Natural communities in the areas removed from the Apple and Lucerne Valley DFAs and the Johnson Valley DFA are extremely diverse and include but are not limited to, Californian montane conifer forest, Central and South Coastal Californian coastal sage scrub, Great Basin Pinyon /Juniper Woodland, Inter-Mountain Dry Shrubland, Intermontane deep or well-drained

Table 4. Summary of Benefits to Covered Species Using Site Survey Composite for the Preferred Alternative (i.e., DRECP Composite Ecological Basline Preferred Alternative v5, GIS data downloaded from Data Basin).

Covered Species	Apple Valley (573 pixels)	Lucerne Valley (787 pixels)	Johnson Valley (428 pixels)
Alkali mariposa lily	0	133	0
Bendire's thrasher	518	564	75
Bighorn sheep	194	139	0
Burrowing owl	559	774	428
desert tortoise	408	719	428
Golden eagle	361	484	353
Least Bell's vireo	80	50	7
Little San Bernardino linanthus	0	84	210
Mohave ground squirrel	253	159	0
Mojave monkeyflower	155	113	0
Mountain plover	7	0	0
Pallid bat	570	756	428
Parish's daisy	108	310	0
Southwestern willow flycatcher	4	7	0
Swainson's hawk	29	0	0
Townsend's big-eared bat	567	775	417
Tricolored blackbird	14	14	0
Yellow-billed cuckoo	3	0	0
Total Species Count in Pixels	**3959**	**5080**	**2346**
# of Covered Species per Pixel	**4 to 11**	**2 to 10**	**4 to 7**
Average # Covered Species per Pixel	**6.9**	**6.45**	**5.48**

soil scrub, Intermontane seral shrubland, California Annual and Perennial Grassland, Lower Bajada and Fan Mojavean /Sonoran desert scrub, Mojave and Great Basin upper bajada and toeslope, Mojavean semi-desert wash scrub, Shadscale/saltbush cool semi-desert scrub, North American Warm Desert Alkaline Scrub, Herb Playa and Wet Flat, Sonoran-Coloradan semi-desert wash woodland/scrub, Madrean Warm Semi-Desert Wash Woodland/Scrub, Mojavean semi-desert wash scrub, North American warm desert dunes and sand flats, North American Warm Desert Alkaline Scrub and Herb Playa and Wet Flat, and, Southwestern North American salt basin and high marsh. In addition, there are several unique plant assemblages in this area due to its location at the juncture of the Mojave and South Coast ecoregions. Here, oak woodlands

intermingle with Joshua tree and Pinyon-Juniper woodlands amid spectacular rocky outcrops. Ecotones are particularly high in biodiversity and contact zones for evolution.

The Twentynine Palms Newberry Rodman-San Gabriel Connection and the Twentynine Palms Newberry Rodman-San Bernardino Connection of the Desert Linkage Network (Penrod et al. 2012) overlap one another in the area of the proposed Apple Valley and Lucerne Valley DFAs. Figure 4 of the Desert Linkage Network in this region also includes the Focal Species Linkage Union (blue) to show the area of the linkage network that was delineated by the land facet analyses (orange). The Proposed Granite Mountain Wildlife Linkage ACEC was designed to connect SBNF with the Bendire's Thrasher ACEC, while the Northern Lucerne Wildlife Linkage is expected to connect the Bendire's Thrasher ACEC to Ord-Rodman DWMA. As proposed, the Granite Mountain Wildlife Linkage ACEC is reduced to about 1.2 miles wide for much of its length south of State Route 18 and more closely follows the linkage design for the San Bernardino-Granite Connection (Penrod et al. 2005), which did not include land facet analyses. Several land facets corridors were delineated between these ranges (see Figures 18 and 19 in Penrod et al. 2012), which are expected to support species movements during periods of climate instability. DFAs are proposed to either side of these proposed ACECs that would constrain the linkage for a distance of roughly 20 miles. Species are then expected to make a hard right to follow Stoddard Ridge around the arm of the DFA proposed in the Northern Lucerne Valley. Objective L1.2 is to "Design landscape linkage corridors to be 3 miles wide where feasible, and at least 1.2 miles wide where a greater width is not feasible". We believe that a greater width is feasible and desirable for the proposed Granite Mountain Wildlife Linkage ACEC. No DFAs should be sited within these areas.

The northern arm of the Lucerne Valley DFA bisects both the focal species and land facet linkage and should be reconfigured to avoid the Desert Linkage Network through this area. The FAA should be included as part of the Newberry Rodman ACEC and NLCS due to its high conservation value (e.g., landscape connectivity, bighorn sheep, intact desert tortoise habitat). In fact, 31 of the 44 focal species evaluated by the Desert Linkage Network are expected to be served by this linkage. The westernmost strand of the Desert Linkage Network that follows the Mojave River for a distance and then arcs to the east toward Newberry Rodman is the corridor with high interspersion of land facets which is expected support species movements during periods of climate instability. The northern part of the Apple Valley DFA bisects this part of the linkage between the Mojave River and the Silver Mountains area of a proposed ACEC and should be included in that ACEC and removed from the DFA.

Figure 5 depicts Desert Bighorn Sheep - Intermountain & Unfiltered Core Habitat (California Department of Fish and Wildlife, April 2013 Draft, A Conservation Plan for Desert Bighorn Sheep in California) in relation to the Preferred Alternative in this subarea. The Desert Bighorn Sheep Mountain Habitat identifies historic, current, and potential core habitat, while the Intermountain Habitat represents the intermountain, lower slope, valley bottom habitat used by desert bighorn sheep to move between mountain habitat. CDFW, also the lead agency on the NCCP, mapped an intermountain connection between San Bernardino National Forest (SBNF) and Ord-Rodman that has a minimum width of roughly 7.8 miles. Bighorn sheep mountain habitat and intermountain habitat largely overlap with the Desert Linkage Network. The upper arm of the Lucerne Valley DFA disrupts intermountain bighorn habitat and should be

Figure 4. Desert Linkage Network Conflicts in the Pinto Lucerne Valley Eastern Slopes Ecoregion Subarea

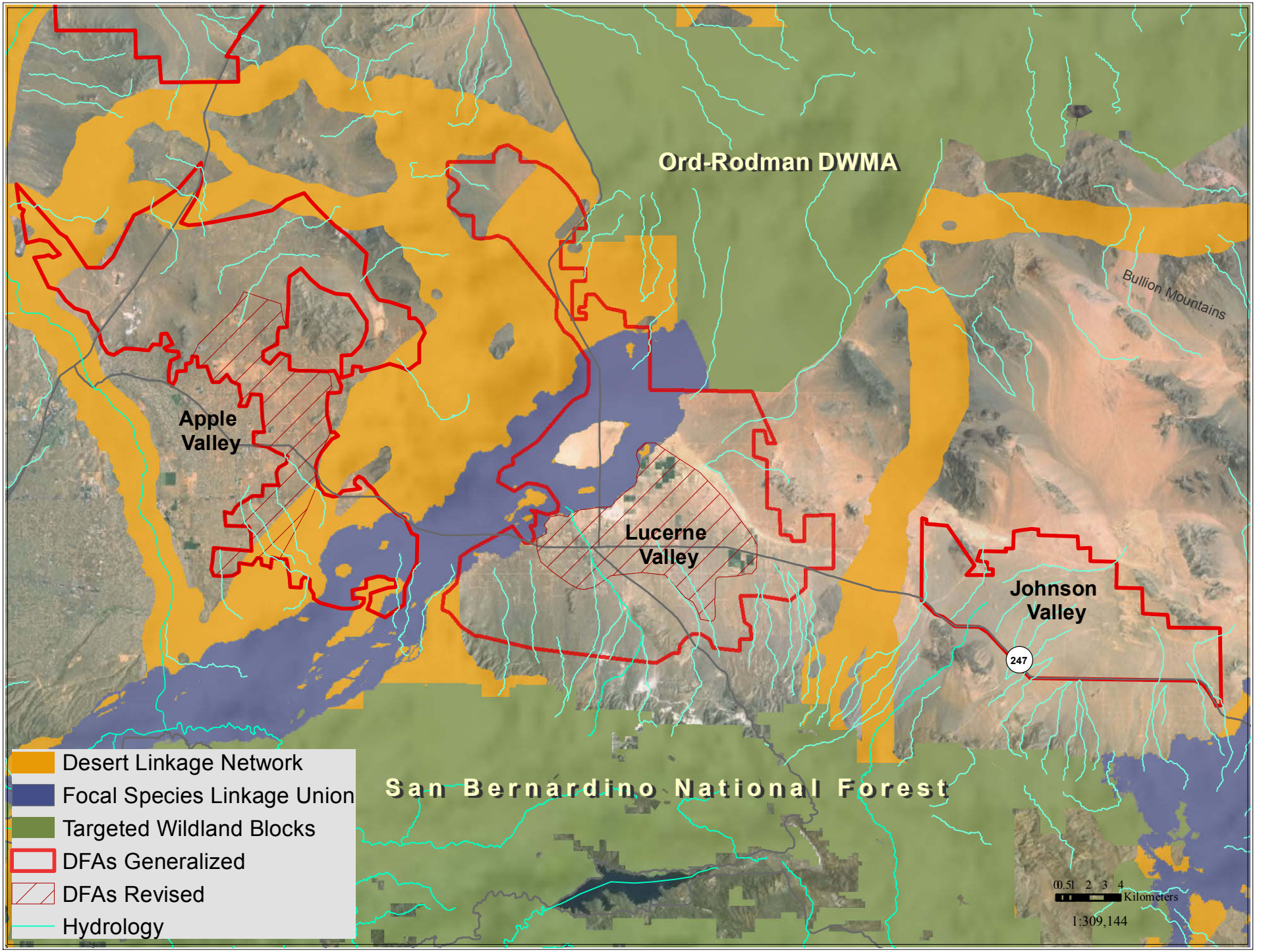
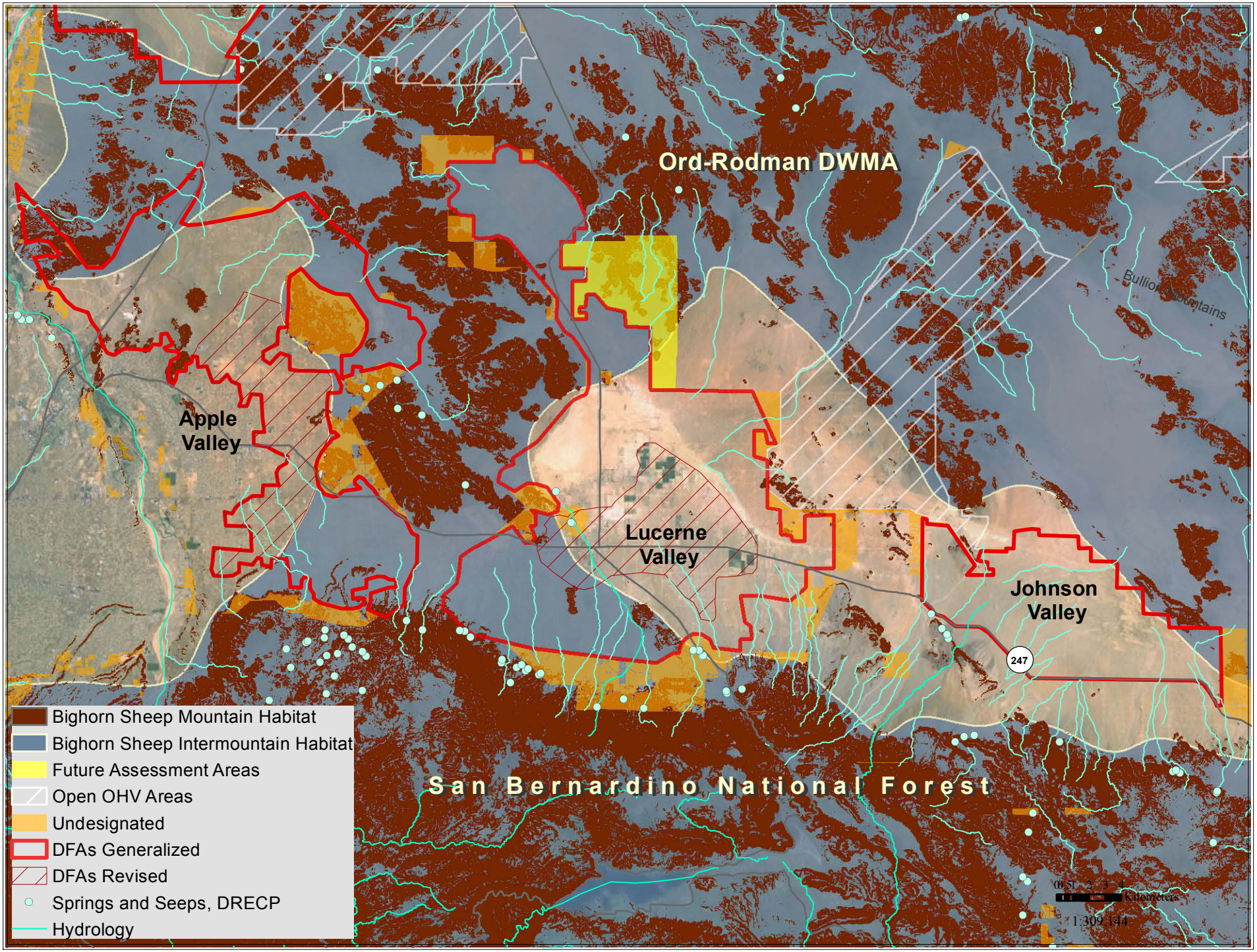


Figure 5. Bighorn Sheep Conflicts in the Pinto Lucerne Valley Eastern Slopes Ecoregion Subarea



reconfigured. Further the FAA includes bighorn sheep mountain habitat in close proximity to mountain habitat in the Granite Mountain Linkage and should be included in the Newberry Rodman ACEC and NLCS. Finally, several areas of bighorn sheep mountain habitat are identified as Undesignated and available for "disposal". Bighorn mountain habitat along the perimeter of the proposed Granite Mountain and Northern Lucerne Wildlife Linkage ACECs should be included in the Reserve Design. Further, Undesignated land on the Ridgeline and slopes of the San Bernardino Mountains between the Juniper Flats NLCS and the Carbonate Endemic Plants NLCS (roughly 15 additional miles is the Grapevine Canyon Recreation Area also known as Juniper Flats by the BLM) should also be included in the Reserve Design, consistent with Step-Down Biological Objective DBSH-B and because there are many springs, seeps, significant riparian canyons, alluvial fans (i.e. rare piedmont fans), and washes in this area essential for bighorn sheep and numerous other species. This area is currently designated as Undesignated in the Preferred Alternative.

This land known as the Juniper Flats subregion by the BLM encompasses 101,000 acres on the northern slopes of the San Bernardino Mountains and stretches from the Mojave River to the Cushenbury Grade. The area is continuous with the San Bernardino National Forest, which encompasses over 600,000 acres and boasts over 600 significant cultural sites. There are several unusual and unique plant assemblages here, with oak woodlands intermixed with pinyon-juniper and Joshua trees and spectacular rock outcroppings. The area is extremely close to the Pacific Crest National Scenic Trail and Deep Creek, which has been nominated as a National Wild and Scenic river as part of the Feinstein Bill. The Juniper Flats area has been submitted to the BLM for consideration for NLCS designation and over 25 NGO's and individuals have endorsed this effort. SC Wildlands strongly supports an NLCS designation for this remarkable area.

Goal DBSH1: Conserve the desert bighorn sheep Sonoran–Mojave desert metapopulation) across the DRECP area within well-distributed habitat areas in mountain ranges and intermountain linkages. Emphasize conservation in areas where herds are most likely to be adaptive and resilient in response to the effects of changes within their metapopulations, including, range shifts, contractions, expansions, local extirpation, and recolonization, as well as environmental changes in climate, temperature, and precipitation. **Comment:** We expect that the Twentynine Palms Newberry Rodman-San Bernardino Connection will be especially important to the Cushenberry Herd of bighorn sheep in a warming climate for access to water resources (e.g., seeps, springs, riparian habitats).

Step-Down Biological Objective DBSH-B: Protect, maintain, and manage for the duration of the NCCP on BLM LUPA conservation designation lands and prioritize for conservation on non-BLM lands substantial representative desert bighorn sheep habitat in the following areas:
o Newberry, Ord, and Rodman Mountains
o North San Bernardino Mountains
o El Paso Mountains
o **Corridors** between the North San Bernardino Mountains and Newberry Mountains
o Corridors between the San Gorgonio Wilderness Area and the western extremity of the Little San Bernardino Mountains
o Portions of the valley habitats between the Palen-McCoy Mountains, Chuckwalla Valley between the Eagle Mountains and the Chuckwalla Mountains

o Portions of the valley habitats between the Little Chuckwalla Mountains, Palo Verde Mountains, McCoy Mountains, Mule Mountains
Comment: The Granite Mountains Wildlife Linkage ACEC as currently proposed is a "corridor" to the south of SR-18 but with our proposed modifications to the DFAs it will be a landscape-level linkage.

Conservation and Management Actions for bighorn sheep are pretty slim and the DRECP says, "Within DFAs on BLM-administered lands Desert Bighorn Sheep CMAs would be implemented to the extent feasible and allowable under existing permits, leases, and allotment plans". Why only to "the extent feasible" rather than to the maximum extent possible? Does this mean CMAs would not be implemented on lands not administered by BLM within the DFAs?
- **AM-DFA-ICS-34:** Access to, and use of, designated water sources will not be affected by Covered Activities in designated and new utility corridors.
- **AM-DFA-ICS-35:** Transmission projects and new utility corridors will minimize effects on access to, and use of, designated water sources.

The proposed Granite Mountain Wildlife Linkage ACEC is described in Appendix L. The Relevance and Importance Criteria states, "the area is critical for bighorn sheep, golden eagles, desert tortoise and prairie falcons and several other species. Additionally, numerous rare and sensitive plants have major populations here, making the area regionally important". Goals: "Protect biological values including habitat quality, populations of sensitive species, and landscape connectivity while providing for compatible public uses". One of the Objectives is to "protect and enhance sensitive wildlife habitat" with the following species listed: desert tortoise, LeConte's thrasher, San Diego pocket mouse, prairie falcon, golden eagle, and Mohave ground squirrel. All species listed in Table 4 should be included here (e.g., least Bell's vireo, southwestern willow flycatcher). In addition, a number of focal species selected for the Desert Linkage Network are expected to be served by this linkage and should be included in this list: puma, badger, kit fox, bighorn sheep, mule deer, little pocket mouse, southern grasshopper mouse, pallid bat, burrowing owl, loggerhead shrike, Bendire's thrasher, crissal thrasher, cactus wren, greater roadrunner, chuckwalla, desert night lizard, desert spiny lizard, Great Basin collared lizard, rosy boa, speckled rattlesnake, Mojave rattlesnake, Bernardino dotted blue, desert green hairstreak, desert metalmark, and yucca moth. These would be good candidate species for monitoring wildlife movement and habitat linkage function for the MAMP's Landscape and Ecological Processes Effectiveness Monitoring. Another Objective is to "protect populations of sensitive plants"; the following species should be added to the 4 existing plant species currently on the list: *Canbya candida*, *Sidalcea neomexicana*, *Plagiobothrys parishii*, *Phacelia parishii*, *Puccinellia parishii*, *Mimulus mohavensis*, *Leymus salinus* ssp. *mojavensis, Eriophyllum mohavense*, and *Calochortus striatus.* In addition, two focal species, *Yucca brevifolia and Yucca* schidigera, from Penrod et al. (2012) should be included.

One of the primary goals for the Desert Tortoise Linkages (Goal DETO2) is to "Maintain functional linkages between Tortoise Conservation Areas to provide for long-term genetic exchange, demographic stability, and population viability within Tortoise Conservation Areas. Emphasize inclusion of high value contiguous habitats pursuant to Nussear et al. (2001) and avoidance of disturbance in habitat with high desert tortoise habitat potential (see Figure C-35)".

It is Nussear et al. 2009, not 2001. Nussear et al. (2009) identifies much of the Apple Valley, Lucerne Valley and Johnson Valley DFAs as highly suitable habitat for tortoise (Figure 6).

There are several areas where the Lucerne Valley and Johnson Valley DFAs conflict with two desert tortoise linkages in the Western Mojave Recovery Unit, Fremont-Kramer to Ord-Rodman Linkage and the Ord-Rodman to Joshua Tree linkage (Figure 7). The upper arm of the Lucerne Valley DFA coincides with intact desert tortoise habitat in the Fremont Kramer to Ord-Rodman Linkage and the FAA that is sandwiched between this DFA and the Ord-Rodman TCA is made up almost entirely of intact desert tortoise. This area of the Lucerne Valley DFA and the FAA is also in conflict with the Desert Linkage Network, Bighorn sheep intermountain habitat, and other Covered Species (e.g., Bendire's thrasher, burrowing owl, golden eagle). In addition, the Lucerne Valley DFA as currently proposed completely severs the northern segment of the Ord-Rodman to Joshua Tree Linkage and would severely compromise the function of this linkage (See AM-DFA-ICS-6 Comment). The great majority of the Johnson Valley DFA is also intact desert tortoise habitat that falls within the Ord-Rodman to Joshua Tree Linkage. These DFAs must be reconfigured to AVOID these Desert Tortoise Linkages.

In addition, the southern segment of the Ord-Rodman to Joshua Tree Linkage to the southeast of the Johnson Valley DFA is also identified as "Fragmented Desert Tortoise Habitat" (Figures C-35 and C-36) and much of it is delineated as "Undesignated" land, which would be available for "disposal". While there are ACEC and NLCS lands proposed on the western fringe of the desert tortoise linkage, these proposed designations do not capture the most permeable route for the tortoise. While the raster data for the least-cost corridor analyses was not available on Data Basin as part of the Desert Tortoise TCA and Linkages data, I know this analysis well enough to know how it looks when converted to a shapefile. BLM has checkerboard ownership in this segment of the linkage and several of the adjacent parcels are NOT developed that would allow for the design and implementation of a "landscape linkage corridor…at least 1.2 miles wide" (Objective L1.2). As such, this segment of the linkage should be identified as a Conservation Planning Area. All desert tortoise linkages should be included in the Reserve Design in order to achieve Goal DETO2 (Desert Tortoise Linkages)**, "**Maintain functional linkages between Tortoise Conservation Areas to provide for long-term genetic exchange, demographic stability, and population viability within Tortoise Conservation Areas". The Western Mojave Recovery Unit and the associated linkages may be especially important to allow the tortoise to adapt to climate change, as indicated in Section III.7.4, "According to climate change models, conditions currently present in parts of the Colorado/Sonoran Desert are expected to expand to other parts of the Plan Area (Allen 2012), with an associated shift in vegetation (Notaro et al. 2012).

AM-DFA-ICS-5 Comment: If "Covered Activities, except for transmission projects in existing transmission corridors, will avoid the desert tortoise conservation areas (TCAs) and the desert tortoise linkages identified in Appendix H", why are ANY DFAs sited in TCAs and linkages? Further, why are any areas of the tortoise linkages "Undesignated" and therefore "available for disposal"? As one of the Reserve Drivers, all desert tortoise TCAs and linkages in ALL Recovery Units should be included in the Reserve Design!

AM-DFA-ICS-6 Comment (1): A population viability analysis (PVA) should have been conducted Plan-Wide for desert tortoise as part of the DRECP process. This information should

Figure 6. High Value Desert Tortoise Habitat in the Pinto Lucerne Valley Eastern Slopes (Nussear et al. 2009)

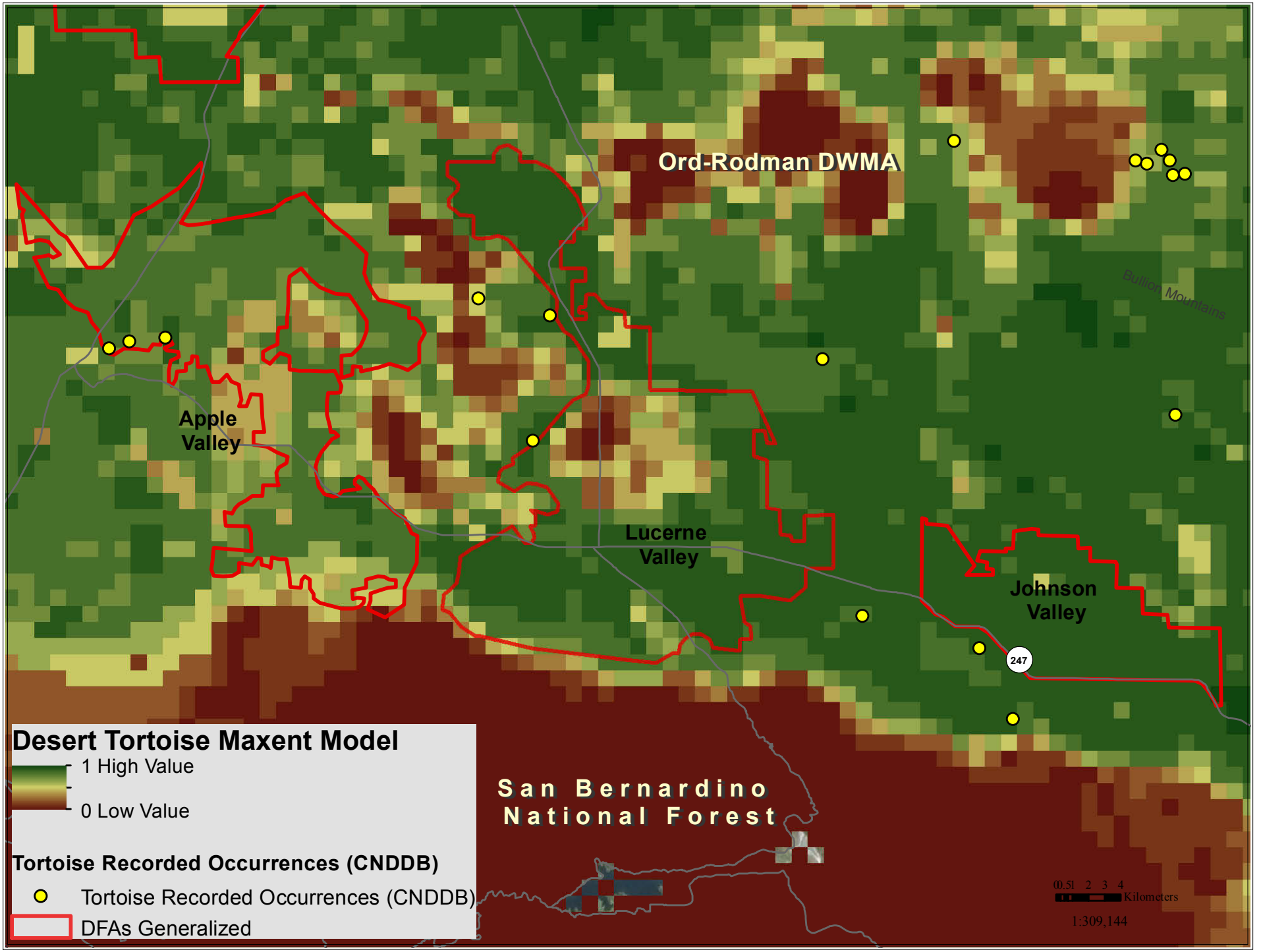
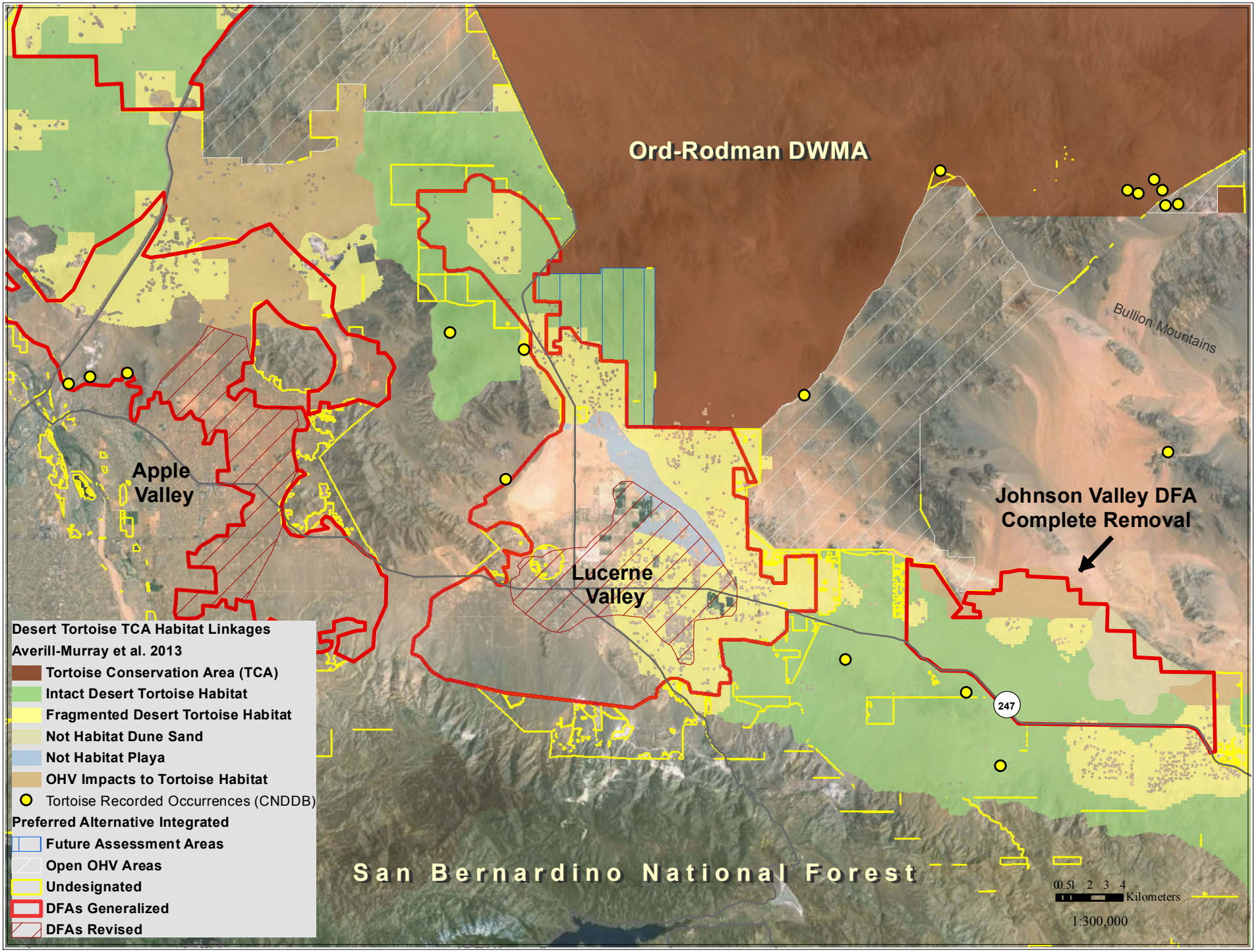


Figure 7. Desert Tortoise TCA Linkage Conflicts in the Pinto Lucerne Valley Eastern Slopes



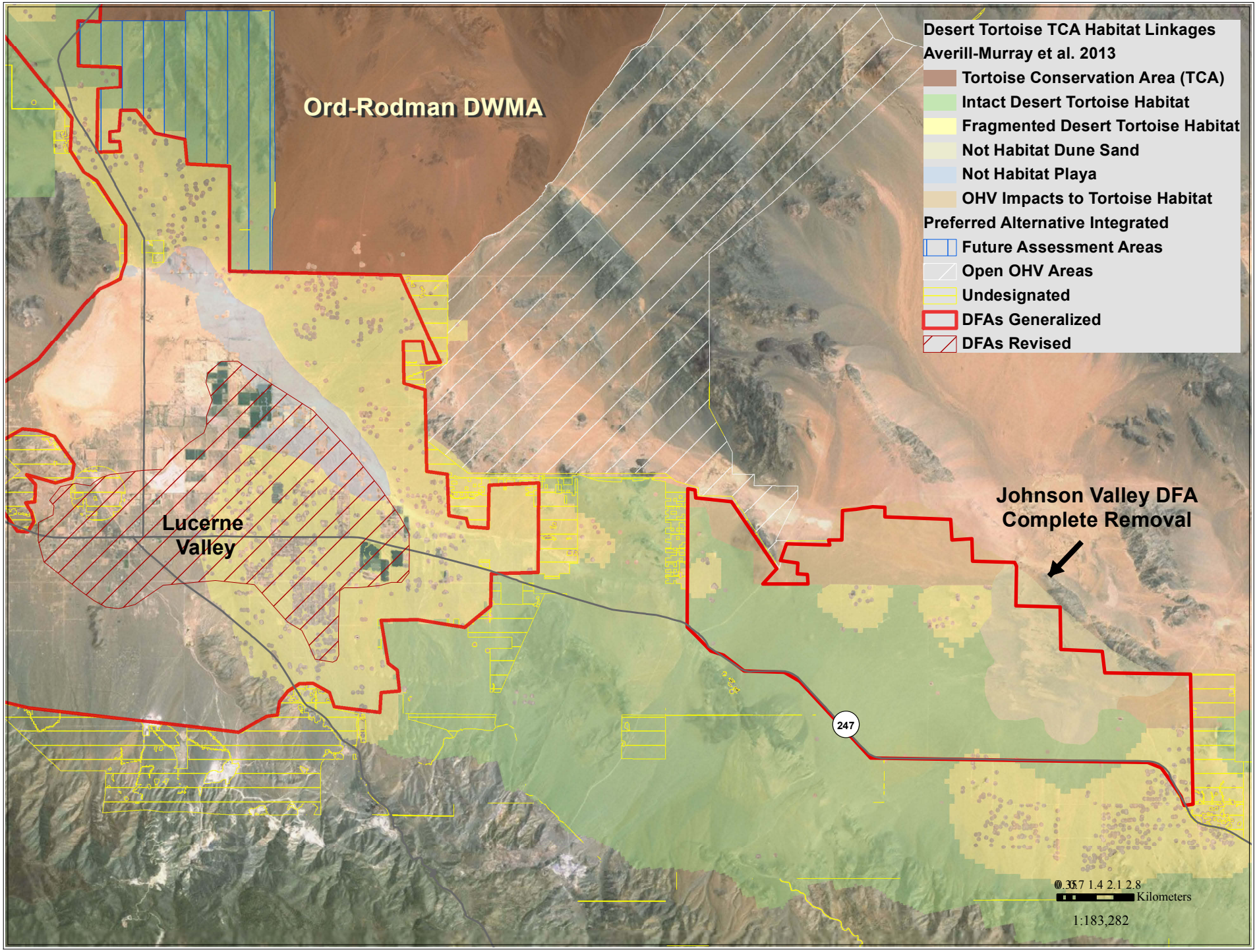
have been presented in Vol. III to assess existing recovery efforts under baseline conditions and in Vol. IV to compare the potential impacts of habitat loss proposed under each Alternative. AM-DFA-IC-6 refers to "the maintenance of long term viable desert tortoise populations within the affected linkage". While each of the desert tortoise linkages identified in Figure H-7 provide live-in and move-through habitat, these linkage are intended to provide connectivity between the TCAs to maintain the viability of the entire population. As stated in Section III.7.6.1.1, " Linkage habitat are important areas identified by Recovery Implementation Teams, such as important genetic linkages identified by Hagerty et al. 2010 (cited in USFWS 2011a) that are important to maintaining the species' distribution throughout its range". A PVA for a "linkage population" doesn't make sense.

AM-DFA-ICS-6 Comment (2): "Covered Activities that would compromise the viability of a linkage population or the function of the linkage, as determined by the DRECP Coordination Group, are prohibited and would require reconfiguration or re-siting".

AM-DFA-ICS-7: Covered Activities will be sited in lower quality desert tortoise habitat in desert tortoise linkages and the Ord-Rodman TCA, identified in Appendix H.
COMMENT: Identified where? Figure H-6 Desert Tortoise Survey Areas? Figure H-7? Neither of these maps depict "lower quality desert tortoise habitat". If Figure H-6, is the "lower quality desert tortoise habitat in the "No Survey Areas" identified in the legend, or in the "No Survey Areas" and "Clearance Survey Only Areas". If so, that would imply that the "Protocol Survey Areas" are higher quality desert tortoise habitat, which would reinforce comments made above for AM-DFA-ICS-5 and AM-DFA-ICS-6. Figure H-7, Desert Tortoise Conservation Areas, identifies the majority of the Apple, Lucerne, Johnson Valley DFAs as Protocol Survey Areas with some smaller areas identified as Clearance Survey Areas.

The Lucerne Valley DFA as currently proposed completely severs the northern segment of the Ord-Rodman to Joshua Tree Linkage (Figure 8) and would severely compromise the function of this linkage (AM-DFA-ICS-6). The analyses conducted by USFWS (Averill-Murray et al. 2013) indicate that this area is relatively permeable to tortoise movement and this entire area is identified as highly suitable in the desert tortoise Maxent model (Nussear et al.2009). This area of the linkage is identified as Fragmented Desert Tortoise Habitat in Attachment B to Appendix D but an evaluation of aerial imagery in this area reveals that existing rural development here is relatively sparse and the majority of residential properties in this area are unfenced. This area of the linkage should not be written off, especially since one of the overarching Biological Goals is to, "Preserve, restore, and enhance natural communities and ecosystems including those that support Covered Species within the Plan Area". The distance between the Ord-Rodman TCA and the Intact Desert Tortoise Habitat in the Old Woman Springs Wildlife Linkage ACEC is roughly 7 miles, fully within the movement capability of an individual tortoise. Sazaki et al. (1995) estimated dispersal distance for pre-breeding male tortoises to be between 6.21-9.32 miles. This DFA must be reconfigured to completely avoid this linkage. Further, the playa habitat to the west of the tortoise linkage, although not tortoise habitat, could buffer the tortoise linkage from Covered Activities in the remaining DFA, while also providing habitat for other Covered Species (e.g., burrowing owl, pallid bat, Townsend's big-eared bat) .

Figure 8. Desert Tortoise Ord-Rodman to Joshua Tree Linkage Conflicts



The Johnson Valley DFA as currently proposed (Figures 7 and 8) would severely compromise the function of the Or-Rodman to Joshua Tree linkage. This proposed DFA is roughly 27,258 acres, much of it Intact Desert Tortoise Habitat as identified in Attachment B to Appendix D and Figures C-35 and C-36. The area of intact habitat in the linkage currently ranges in width from roughly 5 to 8 miles wide. The proposed Johnson Valley DFA would reduce the width of the linkage to about 3 miles wide in this stretch of the linkage. The average home range size for desert tortoise in the Western Mojave Recovery Unit is 125 acres (USFWS 1994, Boarman 2002). Would this significant reduction of intact habitat allow for "the maintenance of long-term viable desert tortoise populations within the affected linkage (AM-DFA-ICS-6)"? This entire DFA is identified as highly suitable in the desert tortoise Maxent model (Nussear et al.2009) and the great majority of it is BLM land. This linkage must not be written off, especially since one of the overarching Biological Goals is to, "Preserve, restore, and enhance natural communities and ecosystems including those that support Covered Species within the Plan Area". We recommend complete removal of this DFA to avoid this linkage in order to "maintain functional linkages between Tortoise Conservation Areas to provide for long-term genetic exchange, demographic stability, and population viability within Tortoise Conservation Areas" and meet the intent of Goal DETO2 (Desert Tortoise Linkages).

- **Objective DETO2.1a (Desert Tortoise Linkages):** Protect, manage and acquire desert tortoise habitat within the following linkages (see Figure C-34) with special emphasis placed on areas of high habitat potential and areas identified as integral to the establishment and protection of a viable linkage network (see Figure C-36). Ensure the long-term connectivity of Tortoise Conservation Areas by maintaining desert tortoise habitat that is of sufficient size and contiguity for maintenance of viable populations within each linkage.
  - o Ord-Rodman to Superior-Cronese to Mojave National Preserve
  - o Superior-Cronese to Mojave National Preserve to Shadow Valley to Death Valley National Park Linkage
  - o Joshua Tree National Park and Pinto Mountains Desert Wildlife Management Area (DWMA) to Chemehuevi Linkage
  - o Death Valley National Park to Nevada Test Site

DETO2.1a COMMENT: Figure C-34 depicts 9 different desert tortoise linkages yet only 4 are listed here, all of which occur in the Eastern Mojave Recovery Unit and the Colorado Desert Recovery Unit. Why are none of the linkages associated with the Western Mojave Recovery Unit included here? For example, the Ord-Rodman to Joshua Tree Linkage includes a contiguous, fairly wide strand that is either intact desert tortoise habitat or fragmented tortoise habitat with High Habitat Potential (C-36). As a "Reserve Driver" Covered Species and Non-Covered but Addressed Species associated with the Western Mojave are reliant and at the mercy of the agencies to create a VIABLE PLAN-WIDE Linkage Network for ALL native species and ecological process of interest in the DRECP Region.

- **Objective DETO2.1b (Desert Tortoise Linkages):** Protect, maintain, and acquire all remaining desert tortoise habitat within linkages already severely compromised, specifically the following (see Figure C-34):
  - o Ivanpah Valley Linkage
  - o Chemehuevi to Chuckwalla Linkage

o Pinto Wash Linkage

DETO2.1b COMMENT: Why is the Ord-Rodman to Joshua Tree Linkage not included here? Or, the Fremont Kramer to Ord-Rodman Linkage? This objective should read: Protect, maintain and restore all remaining desert tortoise habitat within linkages already severely compromised, specifically the following (see Figure C-34 through C-36):
o Ivanpah Valley Linkage
o Chemehuevi to Chuckwalla Linkage
o Pinto Wash Linkage
*ADD Ord-Rodman to Joshua Tree Linkage
*ADD Fremont Kramer to Ord-Rodman Linkage

Objective DETO2.1c (Desert Tortoise Linkages): Protect intact habitat (see Figure C-35) within the following linkages to enhance the population viability of the Ord-Rodman Tortoise Conservation Area.
o Ord-Rodman to Joshua Tree Linkage
o Fremont Kramer to Ord-Rodman Linkage

DETO2.1c COMMENT: The DRECP refers the reader to Figure C-35 Desert Tortoise Biological Goals and Objectives but the LEGEND on this map refers to Objective DETO2.1d in relation to the Ord-Rodman to Joshua Tree Linkage and the Fremont Kramer to Ord-Rodman Linkage but DETO2.1d doesn't exist under Goal DETO2 (Desert Tortoise Linkages). However, Figure C-36 Desert Tortoise Biological Goals and Objectives and Habitat Potential does identify DETO2.1c for these two desert tortoise linkages. There is no explanation for the legend in Figure C-36 but one must assume that the High and Low following the BGOs relate to High Habitat Potential and Low Habitat Potential. The "Fragmented Habitat" in both of these linkages identified in Figure C-35 is also identified as having High Habitat Potential in Figure C-36. Protecting only "intact habitat" in the Ord-Rodman to Joshua Tree Linkage will do nothing to enhance the population viability of the Ord-Rodman Tortoise Conservation Area if ALL of the habitat within the linkage between the TCA and the intact habitat is entirely within a DFA! Shouldn't the tortoise linkages enhance the population viability of all of the TCAs (e.g., Joshua Tree, Fremont Kramer)?

Step-Down Biological Objective DETO-B: Protect, maintain, and manage for the duration of the NCCP on BLM LUPA conservation designation lands and prioritize for conservation on non-BLM lands substantial representative areas of desert tortoise habitat in the following areas:
O Desert Tortoise Research Natural Area
O Fremont-Kramer Desert Wildlife Management Area and Critical Habitat Unit
O Ord-Rodman Desert Wildlife Management Area and Critical Habitat Unit
o Portions of the Superior-Cronese Desert Wildlife Management Area and Critical Habitat Unit
o Portions of the Chuckwalla Desert Wildlife Management Area and Critical Habitat Unit
o Portions of intact desert tortoise habitat in the Colorado Desert
o Fremont Kramer to Ord-Rodman Linkage
o Chemehuevi to Chuckwalla Linkage
o Portions of the Ord-Rodman to Joshua Tree Linkage – WHY only portions?

Step-Down Biological Objective DETO-C: Establish long-term conservation to protect, manage, and enhance habitat value for 266,000 acres of desert tortoise habitat that contributes to the DRECP NCCP reserve design in and around the following areas: Desert Tortoise Research Natural Area, Fremont-Kramer Desert Wildlife Management Area and Critical Habitat Unit, Ord-Rodman to Joshua Tree Linkage, Fremont Kramer to Ord-Rodman Linkage, Pinto Wash Linkage, and Chemehuevi to Chuckwalla Linkage. COMMENT: FAA just outside of Ord-Rodman ACEC/NLCS is intact desert tortoise habitat, mountain and intermountain habitat for bighorn sheep, part of land facet linkages and habitat for numerous focal species in the Desert linkage Network, and other Covered Species (e.g., golden eagle, burrowing owl). In the Overview of the Preferred Alternative II.3.1.1., it says "The current known value of these areas for ecological conservation is moderate to low". The current known value of this FAA for ecological conservation is very high.

Step-Down Biological Objective DETO-D: Maintain and manage for resource values on BLM LUPA conservation designation lands habitat for desert tortoise in the following areas:
o Remainder of the Ord-Rodman to Joshua Tree Linkage
o Fremont Kramer to Ord-Rodman Linkage

Figure 9 shows areas of the Apple and Lucerne Valley DFAs that conflict with the Mohave ground squirrel. While the Pinto Lucerne Valley and Eastern Slopes Subarea is outside of the Mohave Ground Squirrel Conservation Area, there are historical recorded occurrences in this subarea and specifically in the Apple Valley and Lucerne Valley DFAs. This subarea lies at the southernmost extent of this species distributional range (Inman et al. 2013) and several areas in this subregion are expected to remain relatively stable (Davis et al. in press) under an uncertain climate.

We trust that the above discussion of Reserve Drivers provides sufficient evidence and justification for modification to the Reserve Design in the Pinto Lucerne Valley and East Slopes Ecoregion Subarea. We have also included a composite figure for the other species listed in Table 4 that are also expected to benefit from these modifications to the Apple and Lucerne Valley DFAs and the removal of the Johnson Valley DFA (Figures 10).

Summary: Under the current pace of development, natural resource agencies need to make near-term decisions in the face of existing land use pressures as well as long-term change. The one thing that is certain about climate change is that it is highly uncertain. Penrod et al. (2012) did not design corridors using complex models of future climate and biotic responses to climate change. Such an approach uses 4 models, with outputs of each model used as input to the next model. Specifically modeled future emissions of CO2 (1st model) drive global circulation models (2nd) which are then downscaled using regional models (3rd) to predict future climate. Then climate envelope models (4th) are used to produce maps of the expected future distribution of species. We avoided this approach for two reasons: (1) Each of the 4 models involves too much uncertainty, which is compounded from model to model and from one predicted decade to the next. In 1999 the IPCC developed 7 major scenarios of possible CO2 emissions during 2000-2011. The total emissions over the century vary by a factor of 6 among scenarios. *Actual emissions during 2000-2010 were higher than the most pessimistic scenario*. For a single emission scenario, different air-ocean global circulation models produce markedly different climate projections (Raper & Giorgi 2005). Finally climate envelope models may perform no

Figure 9. Mohave Ground Squirrel Conflicts in the Pinto Lucerne Valley Eastern Slopes

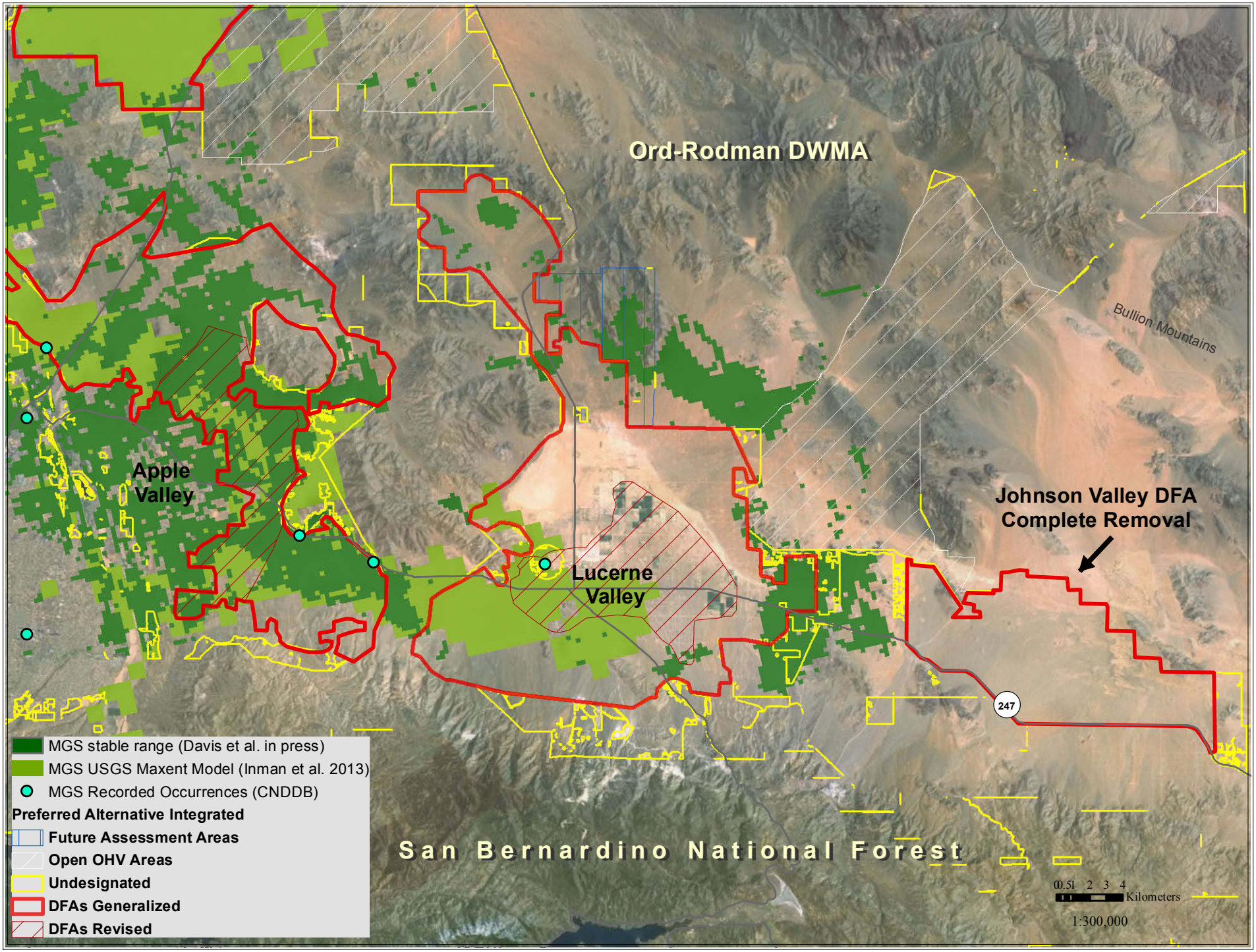
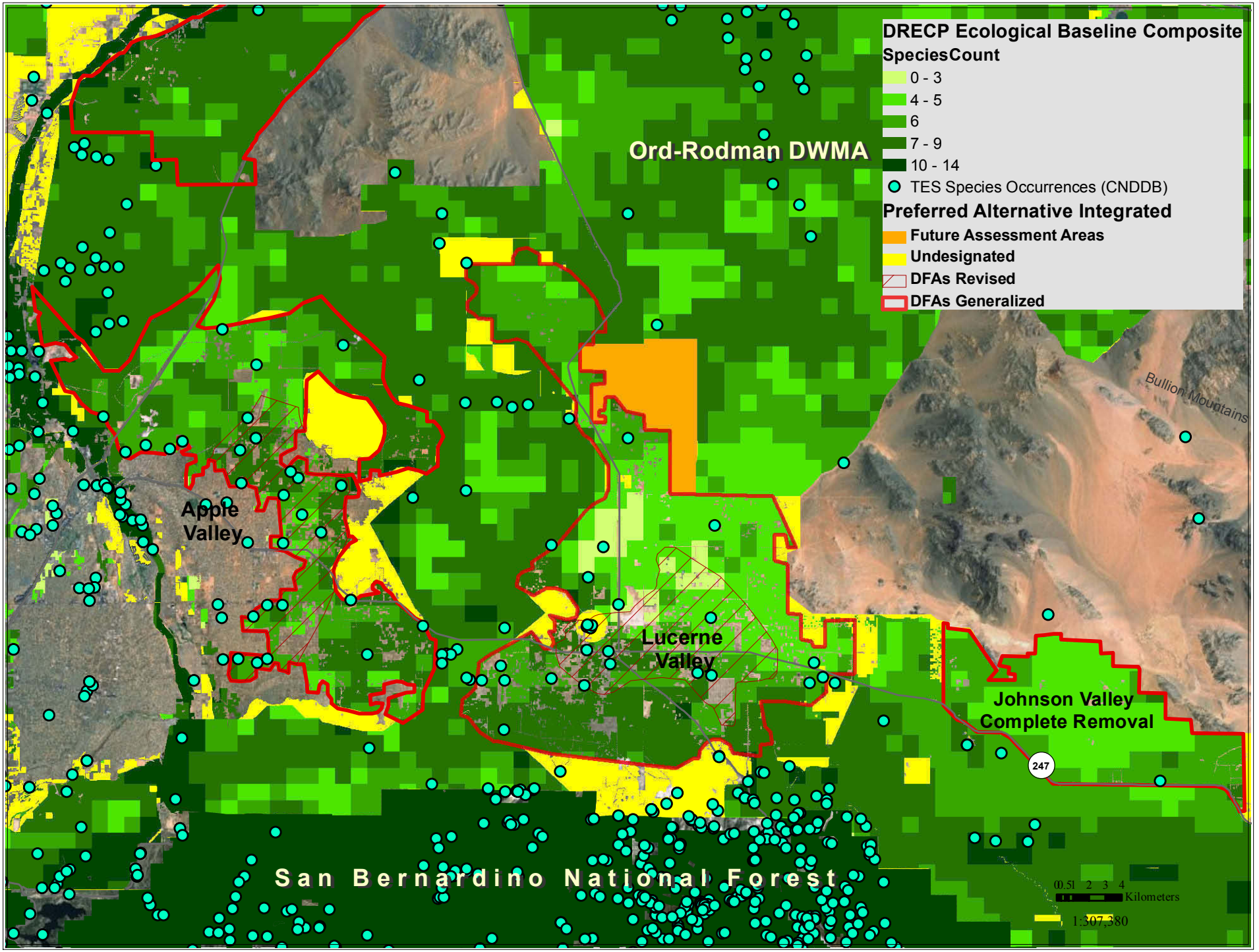


Figure 10. Covered Species Count in the Pinto Lucerne Valley Eastern Slopes



better than chance (Beale et al. 2008). Because these sophisticated models have not simulated the large shifts during the last 100,000 years of glacial oscillations, Overpeck et al. (2005:99) conclude the "lesson for conservationists is not to put too much faith in simulations of future regional climate change" in designing robust conservation strategies. (2) These models produce outputs at a spatial resolution too coarse to support decision making in the California desert. The downscaled climate projections have minimum cells sizes measured in square kilometers. Penrod et al. (2012) used an alternative "land facets" approach to design climate-robust linkages that maximize continuity of the enduring features (topographic elements such as sunny lowland flats, or steep north-facing slopes) that will interact with future climate to support future biotic communities. Enduring features reflect the stable state factors, namely topography, geology, and time. The uncertainties of the land facets approach are almost certainly less than the 6-fold uncertainty in emission scenarios multiplied by the uncertainty in general circulation models multiplied by the uncertainty in regional downscaling multiplied by the uncertainty in climate envelope models.

The Desert Linkage Network (Penrod et al. 2012) was designed to accommodate species movements, range shifts, and continued ecological functions during climate change. The Plan Wide Preferred Alternative includes 2,024,000 acres of DFAs and transmission corridors but says only about 177,000 acres will actually be impacted. If 177,000 acres is all that is truly needed to meet renewable energy goals, then ***ALL*** areas of the Desert Linkage Network (Penrod et al. 2012), Desert Tortoise TCA and Linkages (Averill-Murray et al. 2013), Bighorn sheep mountain habitat and intermountain habitat (CDFW 2013), and Mohave ground squirrel important habitat (Inman et al. 2013, UCSB 2013) should be included in the Reserve Design. Strategically conserving and restoring functional connections between large wildlands is an effective countermeasure to the adverse affects of habitat loss and fragmentation, and it is an essential mitigation measure for climate change.

In Volume 1 Chapter 1.2, Legal Framework, the DRECP says, "*To approve the DRECP as an NCCP, CDFW must find, based upon substantial evidence in the record, that the NCCP:*

4. Develops reserve systems and conservation measures in the Plan Area that provide for, as needed for the conservation of species, all of the following: (a) conserving, restoring, and managing representative natural and seminatural landscapes to maintain the ecological integrity of large habitat blocks, ecosystem function, and biological diversity; (b) establishing one or more reserves or other measures that provide equivalent conservation of Covered Species within the Plan Area and linkages between them and adjacent habitat areas outside of the Plan Area; (c) protecting and maintaining habitat areas large enough to support sustainable populations of Covered Species; (d) incorporating a range of environmental gradients (such as slope, elevation, and aspect) and high habitat diversity to provide for shifting species distributions due to changed circumstances; and (e) sustaining the effective movement and interchange of organisms between habitat areas in a manner that maintains the ecological integrity of the habitat areas within the Plan Area".

CDFW cannot approve the DRECP as an NCCP because there is NOT substantial evidence in the record that "ALL" of the above conditions have been met.

Thank you for the opportunity to provide comments on the DRAFT EIR/EIS for the DRECP. SC Wildlands is available to consult with the natural resource agencies to ensure that connectivity is adequately and accurately addressed in the DRECP.

Respectfully Submitted,
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