2022 Power Strategic Long-Term Resource Plan (SLTRP)

Roadmap to 100% Carbon Free by 2035

SLTRP Advisory Group Meeting #6
Phase II (Scenario Development)
November 19, 2021

Meeting Agenda

Joan Isaacson, Kearns & West

- Welcome & Introductions
- Meeting Purpose and Agenda Overview
- Distribution Automation
- 2022 SLTRP Advisory Group Feedback and Refined Draft Scenario Matrix
- 2022 SLTRP What-If Scenarios Discussion
- Poll Questions
- Wrap Up

Website: www.ladwp.com/SLTRP
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Guides for Productive Virtual Meetings

Advisory Group Role in 2022 SLTRP

The Advisory Group will provide input and feedback based on their expertise, knowledge, and resources of the organizations, institutions, and constituent groups represented by Advisory Group members.

Advisory Group Meeting Plan

Phase 1 | Q3 2021 Launch & Laying Foundation	Phase 2 | Q3 2021 Scenario Development	Phase 3 | Q4 2021 Modeling	Phase 4 | Q1 2022 Results	Phase 5 | Q2-3 2022 Outreach
#1 September 23 • Advisory Group Launch • LADWP Overview • LA100 (Achieving 100% Renewable Energy) • 2022 SLTRP Orientation • Advisory Group Protocols & Operating Principles	**#4 October 22** • Customer Focused Programs - Energy Efficiency & Building - Electrification - Transportation Electrification - Demand Response • Draft Scenario Matrix	**#7 December 17** • 2022 SLTRP What-If Scenarios Discussion • Final Scenario Matrix	**#8 February TBD** Preliminary Results	**#9 July TBD** Public Outreach Results
#2 September 30 • *LA100 Study Review (NREL) at 9 am* • LA100 Rates Analysis (OPA) at 10 am • LA100 Next Steps (LADWP) • LA100 Assumptions (PSRP) • Consider Topics for October 22 • Consideration of Scenario Definition	**#5 November 10** • LA100 "No Combustion" Scenario • 2022 SLTRP Assumptions • Metrics & Evaluation Process • Scenario Considerations • Refine Scenario Matrix	November-January • Internal Modeling • Analysis of Scenarios	March – April TBD Potential field	August Review Draft 2022 SLTRP
#3 October 08 • SLTRP Deep Dive • SB100 Review (LADWP) • 100% Carbon-Free by 2035 Requirements (NREL) • Green Hydrogen in LA (LADWP) • 2022 SLTRP Key Considerations and Potential Scenarios	**#6 November 19** • Distribution Automation • 2022 SLTRP Advisory Group Feedback and Refined Draft Scenario Matrix • 2022 SLTRP What-If Scenarios Discussion	Modeling Underway	May – June TBD Community Outreach Meetings	September Submit Final 2022 SLTRP for approval

Role of Customer-Focused Programs

LA100 showed customers have an important role to play in reaching 100% carbon-free energy.

Energy efficiency: Offsets electrification-driven load growth; mitigates potentially higher electricity rates; lowers energy burden for low-income residents.

Greater electrification: Contributes to higher public health and GHG benefits; helps reduce per-unit electricity cost.

Customer demand flexibility: Helps contain costs of adding electrification and achieving 100% renewable energy; also supports reliability.

Distribution Grid Modernization

Emil Abdelshehid and Kodi Uzomah
LADWP Manager of Distribution Automation





Discussion and Q&A

2022 SLTRP: AG#5 Feedback

Joan Isaacson, Kearns & West
Jay Lim, LADWP Manager of Resource Planning





Advisory Group #5 Raw Feedback

So, last night I read a Fortune article reporting that Newsom has declared natural gas “carbon neutral”. Really hoping that’s fake news.	We had a low interest in Equity here perhaps because LA 100 Equity Strategy is seperately addressing Equity…so the question is how will SLTRP take those results from the Equity Strategy into advisement.	I am uncertain why there is hesitation about in basin green hydrogen?
Wasn' t the lack of real estate for developing more in Basin also a factor? And could this be overcome with Underground Grid development?	How does the SLTRP then inform the PSRP?	We are re-litigating NREL's flat statement in their last LA100 meeting that sufficient reliability cannot be achieved without combustion generation in-basin at all four locations where it now exists (because that is how the distribution system works).
https://www.forbes.com/sites/kensilverstein/2012/08/02/upgrading-the-grid-by-going-underground/?sh=413cb4222b4f	For 5% if it makes sense. I earlier gave an example where it might reduce more GHGs than NOT burning it for generation.	So we need to be really carefull when we talk about "federal standards" Many of the standards are technology neutral. And you can actually derive many services 24x7 from solar to meet short term reliabilty standards. The big problem really is what happens when transmission goes out for a week. Thats when it becomes more challenging to rely entirely on resources like wind and solar.
That Forbes article is probably https://www.forbes.com/sites/jamesconca/2021/11/03/california-governor-gavin-newsom-proclaims-natural-gas-to-be-zero-carbon/?sh=692aefc462ad, was referring to https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB423, which doesn't look bad at first glance.	If we didn't have generation capacity to support a high increase in EV sales, turning on the gas generation for 5% of the year could result in MORE THAN OFFSETTING reductions in GHGs from the supported EVs.	The hesitation around in-basin hydrogen is that (1) hydrogen at utility scale hasn't been demonstrated yet, (2) its likely to be very expensive, and (3) it raises air quality concerns as nitrous oxides may increase dramatically compared to gas fired power plants
There are now longer duration batteries…	ty. yes, transportation and building electrification are key.	Katie, that is why I am hoping we can bypass this argument. We need combustion generation. We can deal with the fuel later.
LADWP is about to pilot 12 hour liquid air storage at Beacon, but generally batteries stop making financial sense around 4 or so hours today….	As Jay Lim is currently asking, in order to achieve this 100% goal EARLY, what should we model? Perhaps we need to say DO NOT MODEL ENOUGH GENERATION FOR A BIG EV INCREASE because it cannot be done reliably in that short a period of time.	Thanks, Katie. Yes, NOx is an open issue.
Doesn't the utilization challenge also apply to combustion facilities? They would also be used rarely, and be very expensive for their limited hours of usage.	Why do you think we can't increase generation reliably?	Dan, there are still many consituents who have not heard about it, and wonder why more microgrids aren't possible to create local resilience and increased equitable investments in those local communities.
Trying to remember, do the demand scenarios include reduction from efficiency standards?	These scenarios look pretty good offhand…	Microgrids are harder than many people have been led to believe, I think. Would love to see city push hard on net-zero energy consumption / resilient multifamily buildings as a first step towards microgrids…
Fuel cells operating on biofuels can produce both renewable electricity and renewable hydrogen, without combustion.	What is the highest projection we have based on new technology for Solar/Microgrids/ in LA, what percentage of the portfolio is possible if we max out the investments there that are possible and considering creative sourcing of underground tunneling and land.	Dan, I have seen some of those case studies, and its been a lack of coordination at the local level and lack of buy in by elected officials, which have slowed the permitting of microgrids that have been funded by the CPUC. Buy in is key, always.
Beefing up transmission to an area just outside basin with enough footprint might sqeak by…	Because 2030 is too early for cost effective and reliable / safe green hydrogen use in-basin. I am personally in favor of a two-phase solution where we PLAN on using natural gas for resiliency in the intermediate term and convert to green hydrogen when and if it becomes practical.	Microgrids require high energy efficiency and lots of solar (and for nighttime, storage). Those are challenging.
We keep hearing about space challenges….I agree it IS a challenge, but there’s so much underutilized space in this region…and lot’s owned by city entities…. (LADWP, LA Metro and LA SAN….). Time to get creative ANd work together.	Agree with avoiding implied preference in naming. Current name seem better than previous ones?	I am not sure that microgrids are more than a "today" issue. Today they give isolated groups ability to use solar power. Tomorrow, everyone will be using solar power. The real issue is that TODAY solar can reduce power bills. May be more economic to just subsidize bills rather thab building microgrids.
Where is Beacon on that map, out of curiosity?	Jay's "avoid building hydrogen turbines" is equivalent to my scenario of "DO NOT BUILD ENOUGH GENERATION TO SUPPORT HIGH EV USE".	Microgrids are potentially a great part of resiliance vs earthquake and other major emergency.

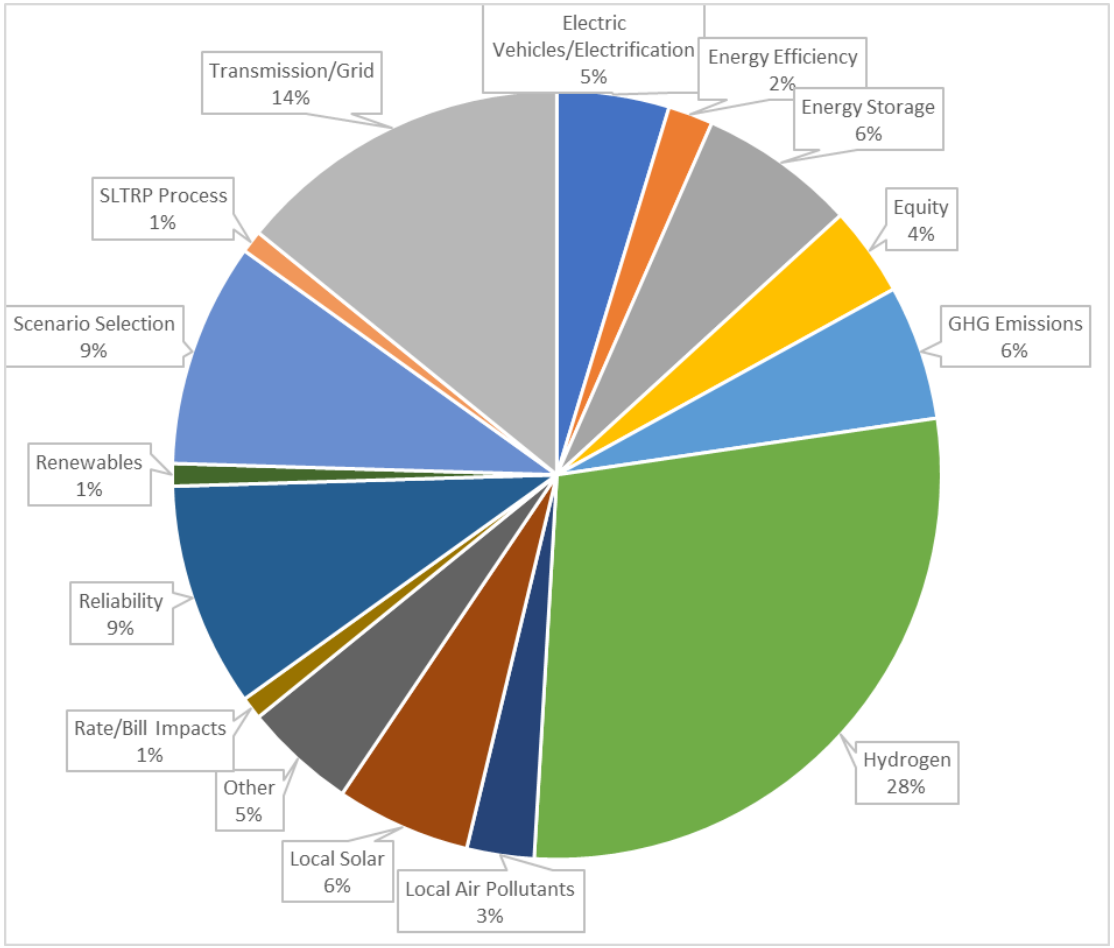
Advisory Group #5 Raw Feedback (continued)

This is great stuff, just a little hard to keep up with. Definitely going to be reading the slides when they are available.	Does this set of scenarios adequately consider cases of low retail load growth due to behind the meter solar / storage?	RE: H2 NOx emissions, has Mistsubishi provided any emissions estimates?
Re: the utilization challenge, what I'm trying to understand is why LADWP is considering hydrogen plants to be better than RE at overcoming the utilization challenge. Could you help me understand that?	(How NEM 3.0 shakes out will be important re how local solar grows and how it impacts revenue...)	V, mhi.com says at 30% hydrogen by volume, they suppress nox as well as 0% hydrogen turbines do...
Hydrogen is for storing RE	The huge amounts of investment from Europe and Japan into hydrogen gives me hope that the storage, cost and NOx issues can/will be addressed.	So no one is concerned that Hydrogen is explosive and leaks can be devastating?
These early scenario analysis, how much in basin solar and storage did you assume? What is the solar and storage you are assuming will be available? Not just LADWP or city owned but community solar. Last I read, you are assuming approx. 35% In basin solar penetration. We can do better.	We need to stop treating our neighbors and LA communities as Sacrifice zones	I am Jasmin. But thyen I am happy with using a small Amount of natural gas each year, versus "being pure".
[What is] RPM?	Keeping the equity (and health) discussions separate from this one, is counter to what was pushed for in the LA100 portion. The board made it clear these issues should be pursued at the same level and factored into the cost/benefit analysis, not as an add on.	I share those concerns, Jasmin. Figuring out how hydrogen is stored and potentially transported is another important concern because existing gas pipelines and storage facilities can be embrittled by hydorgen.
LADWP might consider building an H2 electrolyzer at the Harbor Plant, and selling surplus to refineries, to reduce in basin gas demand, and help phase out Aliso Canyon	It is really important that we meet our local clean air targets. Low NOx emission is an important part of that. Really low capacity factors help a lot.	Right, I expect hydrogen will not generally flow through existing pipes.
Those in-basin combustion units also provide 1-in-100 year emergency generation with methane, which provides peace of mind.	Also - discounting in basin battery storage and other viable strategies due to "space issues" is limiting. The scenario NEEDS to address the value of fully leveraging the City's resources, despite the historical department barriers.	Agree with Barlak that bill impact - especially total household energy bills - is the key consumer impact metric.
Could site an electrolyzer across the road from Scattergood... and consider storing h2 via a new, safe well drilled from there to a depleted gas field	There's a resiliency factor from local storage that should be factored in as well	Yes, exactly, that is super low assumption, and is artificially creating the short falls you are saying needs to be covered by in basin combustion. Their is also so much more solar potential that can be dispatchable. The cost of solar and battery storage will most likely go down too and, according to your assumptoins on hydrogen cost, it looks like it will be cheaper and some of that additional solar and storage cost wont impact the rates.
I saw around 6 TWh of H2 generation needed for the early bio fuel case. Where do we get the energy input to produce the hydrogen needed?	The RFI results are going to be very interesting to stakeholders. I'd like as much clarity as you can provide on what you're hearing back from the developers on the expected emissions control (both overall annual emissions and the most intense hourly emissions) as well as description on how the hydrogen would be transported and stored.	N -1 -1 as a resiliency analysis may be a somewhat narrow scope for substantive results, as it does not entail other external effects such as weather related.
The refinery is quite close to scattergood and uses a lot of hydrogen	Fred may be right to be hesitant about high EV load growth. There should be a low-growth scenario in SLTRP. However I believe there also needs to be a HIGH growth EV scenario, for which we need to have GENERATION. In that regard, the folks who don't want ANY compustion because it is combustions may be forgetting how TRIVIAL are GHG and NOx effects from gas generation versus petroleum fueled transportation. If we need gas generation to support big reductions in GHG from transportation, so be it. We get a double win in more GHG reduction and more smog reduction.	Jack, are you assuming that LADWP is proposing letting the lights go out?
And underwater grid development!	I would like ot amplify Marta's request earlier this meeting to include a scenario that looks at in-basin alternatives to hydrogen. To me, I think that means evaluating long-duration in-basin storage.	the 8 minute solar energy and storage project PPA is a good indication of the market price for new solar/storage.
Do the questions assume that "create more generation" means SOLAR? The issue is that we can't run the in-basin system without either available-at-night generation or battery storage.	Results need to be evaluated based on feasibility. This includes extent of need and challenges for scaleup for hydrogen, long duration storage, etc. They also need to evaluate scenarios based on customer conversion needs/challenges, utility infrastructure deployment/need challenges; in addition the how the scenarios compare in providing resiliency.	Estimated outage impact is ~ 2.5 billion in lost economic activity in the basin for an 8 hour outage. Its discussed in our recent decarb white paper: https://www.socalgas.com/sites/default/files/2021-10/Roles_Clean_Fuels_Full_Report.pdf

Advisory Group #5 Raw Feedback (continued)

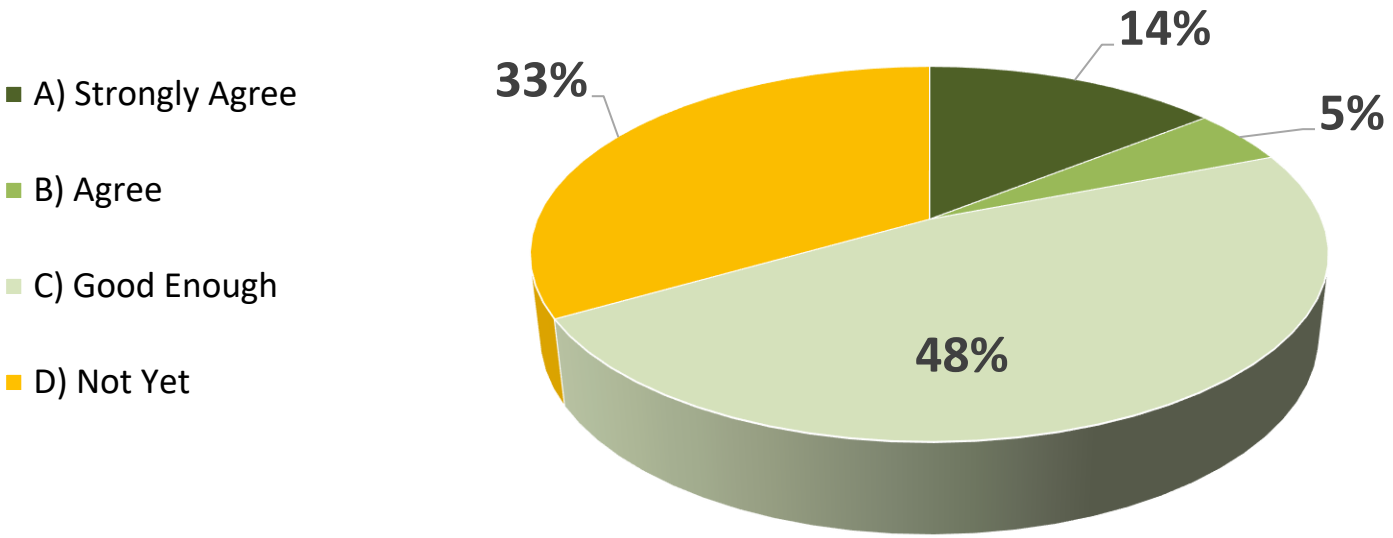
Tony, recharging local long-term stored hydrogen could be done with out of basin utility-scale wind and solar...	Will constructability of renewable supply projects to meet the 2035 goal be assesseded?	To some extentv we also have a philosophy issue. LADWP has always mainatrined resilience by owning its own generation. LA100 puts us in a more of "buy everything" in order to avoid capital costs. Jack is asking whether or not there is enough willingless in the private industry to near these capital costs for the amount NREL is assuming DWP will pay. I also worry about meltdowns of outside suppliers.
Can you address using underground space please? We tunnel for Metro, maybe we can tunnel for DER?	I want to see thorough analysis on emerging long term storage alternatives and specific community projects that help with local resiliency	In general, LADWP has to conform to NERC reliability standards. If Jack is saying that LADWP is planning to violate those standards, he should say so.
Dan, the questions asked about "creating more generation" in-basin. That is what my question was about.	City has been encouraging efficiency and solar, but not really strongly. What if the city make a big push for net zero / high efficiency / resilient multifamily buildings as a first step towards microgrids? How much impact would that have on local demand / emissions / dwp revenue?	I'd still recommend looking at long-duration storage (CAES, LAES, flow, underground/modular PHS, iron air) separately from hydrogen storage since there are different cost structures and emissions profiles, and potentially to identify duration of storage and generation needed for resiliency and contingency-related reliability. Happy to follow-up with more details.
Tony, I think the in-basin generation being discussed is mostly hydrogen combustion turbines.	Re future load: what does demand in transp sector look like if we actually made it safe to walk/bike./use transit vs. everyone driving an EV large SUV, or compact development vs continued urban sprawl that drives VMT.	I appreciate Jason's point and would add that the US is not only one of the largest global emitters but are responsible for the most Historic emissions. We owe the world and future generations ambitious targets and equitable access to those historically marginalized.
Option: Elon Musk's tunnelling technology at the Boring Company, which is supposedly more efficient and cheaper.	Answered D because it was n ot clear that there will be a HIGH EV scenario, mainly because of hesitancy to use green hydrogen early.	Noh, LADWP is planning a 12 hour liquid air storage pilot...
Dan, if that is correct then I am a happy camper. As long as we have adequate COMBUSTION generation in-basin, we can deal with the fuel later. However, Dan, we just got another challenge to the use of COMBUSTION, regardless of type.	The scenarios are much better, but not there yet. As Francis mentioned, Sierra Club wants to see thorough analysis on emerging long term storage alternatives and specific community projects that help with local resiliency.	we need to be really careful when talking about hydrogen, especially for frontline communities who may face even more local air impacts: https://earthjustice.org/features/green-hydrogen-renewable-zero-emission
I agree with Bonny and Marta -- with the combined possibility of underground space and the amount of underutilized space across the city, I think we should be very careful about discounting solutions due to land constraints.	Their were more scenarios that were requested during the discussion including a no in basin hydrogen	Its also because LA 100 Equity Strategy is seperately addressing Equity...so the question is how will SLTRP take those results from the Equity Strategy into advisement.
Plain old smaller-bore drilling is getting pretty good for putting in underground transmission...	Things to consider in scenarios - resiliency, leveraging underutilized resources, addressing the current disconnect equity/health and the scenarios cost/issues	That earthjustice page seems to mostly be concerned with non-green hydrogen (not a problem here) and about NOx (a real issue that needs work, but seems solvable).
Undergrounding tranmission lines is extremely expensive,.	Also - need integration of energy efficiency beyond current code.	I agree Francis. I live in one of those communities. I sense that the green hydrogen solution is being made more to meedt that last 5% of the LA100 goal and thus to please the political purists than because it is a sane and reasonable cost solution.
Underground transmission lines strike me as "mission creep"	I support Jasmin's NO in basin combustion generation if only because it will show that is not feasibile.	Except that Tony, you prefer continuing to burn methane, whereas Francis doesn't.
This is a good point. The federal reliability standards do not allow only transmission as a resource. You NEED in-basin generation 24x7. Solar is not 24x7.	Given certain stakeholder hesitation towards in basin hydrogen and affinity for local distributed generation, I suggest LADWP including a scenario where there is no in-basin hydrogen or biomass. It can be enlightening to see how the system fares with a heavy reliance on distributed systems and its impact on overall reliability. This may help us all see what you are trying to describe. Would that be possible?	Given certain stakeholder hesitation towards in basin hydrogen and affinity for local distributed generation, I suggest LADWP including a scenario where there is no in-basin hydrogen or biomass. It can be enlightening to see how the system fares with a heavy reliance on distributed systems and its impact on overall reliability. This may help us all see what you are trying to describe. Would that be possible?
What are the consequences if the lights go out?	Given certain stakeholder hesitation towards in basin hydrogen and affinity for local distributed generation, I suggest LADWP including a scenario where there is no in-basin hydrogen or biomass. It can be enlightening to see how the system fares with a heavy reliance on distributed systems and its impact on overall reliability. This may help us all see what you are trying to describe. Would that be possible?	Everyone agrees that reliability is very important.

SLTRP Advisory Group Meeting #5 Feedback Categories



2022 SLTRP Updated Poll Results (AG #5)

The draft scenarios capture the range of the Advisory Group's interests and priorities for the SLTRP process



Polling results from AG Meeting #5:

14 AG members responded live + 7 AG members responded via email for a total of 21 votes.

67% of the responses were affirmative (green).

Discussion and Q&A

2022 SLTRP: Refined Scenario Matrix Refinements

Jay Lim, LADWP Manager of Resource Planning
Joan Isaacson, Kearns & West, Facilitator

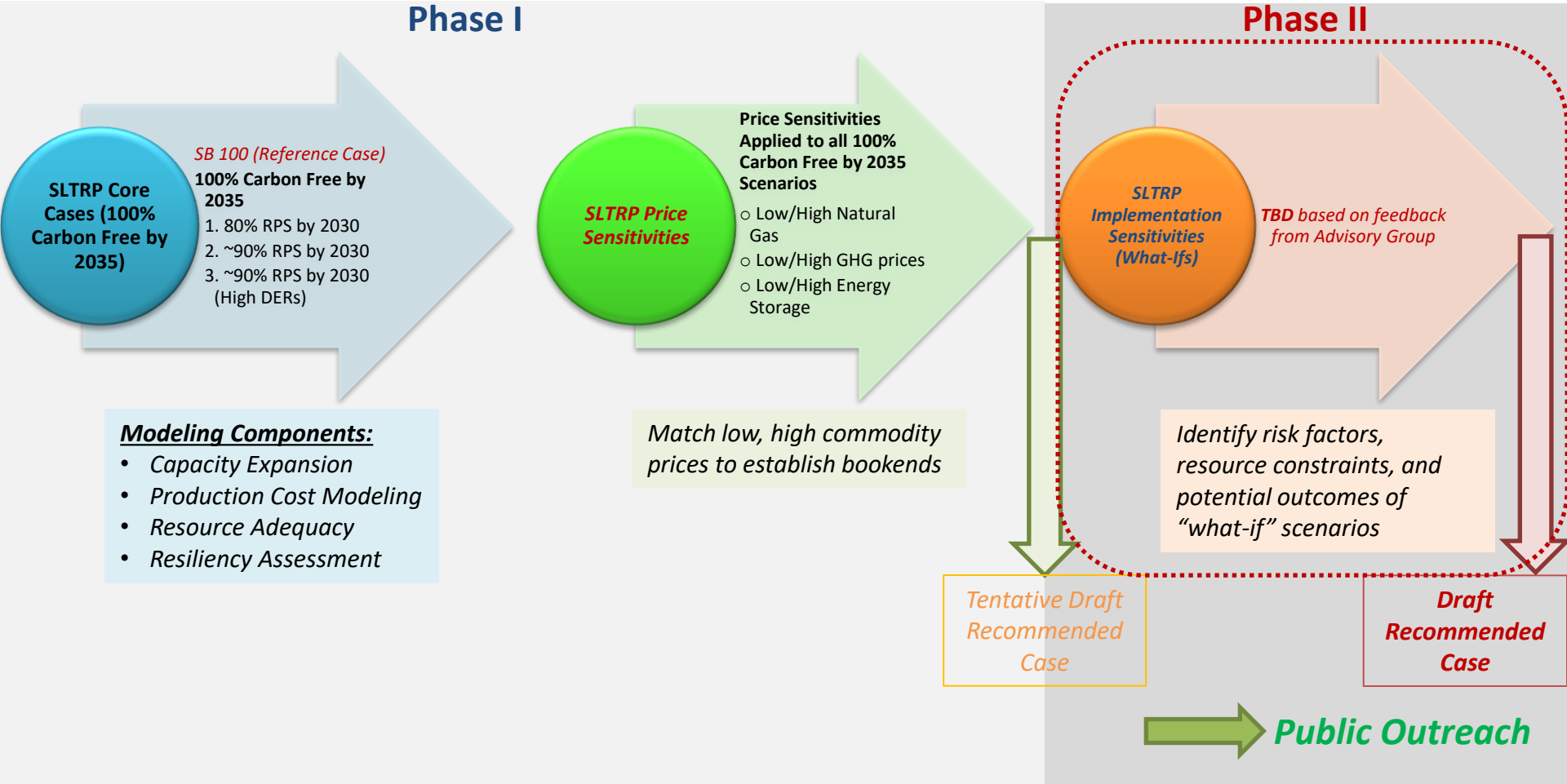




September 2021 City Council Motion

- **No. 21-0352: LA100 / SLTRP / 2035 100% Carbon-Free Energy / LADWP**
  - Instruct LADWP to prepare an SLTRP that achieves 100% carbon-free energy by 2035, in a way that is equitable and has minimal adverse impact on ratepayers
  - Prioritize equity for EJ communities defined as at or above the 75th percentile on CalEnviroScreen. Ensure emissions do not increase for any period of time in EJ communities.
  - Report on "no-regrets" projects common to all LA100 paths, and "shovel-ready" projects to act on Federal and State funding opportunities
  - Report every six months to ECCEJR Committee an update via one-page report card, including necessary ingredients to achieving a clean grid by 2035, as well as barriers and challenges such as streamlining transmission upgrades

2022 SLTRP Modeling Process



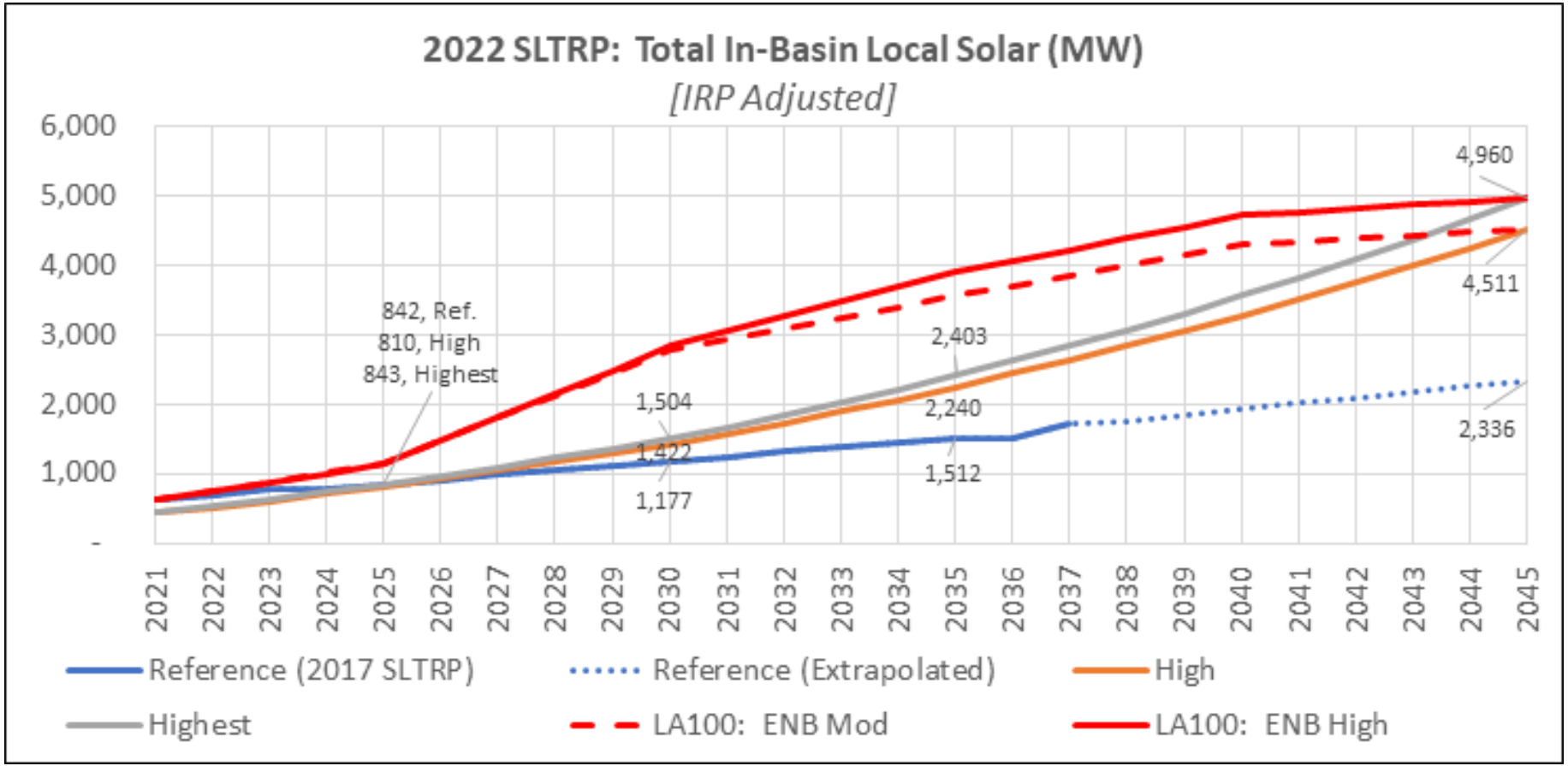
2022 SLTRP Core Scenarios *(preliminary)*

		100% Clean Energy by 2045	100% Carbon Free by 2035		
		SB 100 (Reference Case)	**Case #1**	**Case #2**	**Case #3**
	2030 RPS Target	60% RPS by 2030	80% RPS by 2030	90% RPS by 2030	90% RPS by 2030
Eligible Technologies	Renewables (Wind, Solar, Geo, Small Hydro) *(primary)*	Yes*	Yes*	Yes*	Yes*
	Energy Storage *(primary)*	Yes*	Yes*	Yes*	Yes*
	Solid Biomass	No	No	No	No
	Biogas/Biofuels	Yes*	No	No	No
	Fuel Cells	Yes*	Yes*, hydrogen only	Yes*, hydrogen only	Yes*, hydrogen only
	Hydro - Existing	Yes*	Yes*	Yes*	Yes*
	Hydro - New	No	No	No	No
	Hydro - Upgrades	Yes*	Yes*	Yes*	Yes*
	Natural Gas	Yes*	Yes*, until 2035	Yes*, until 2035	Yes*, until 2035, Limited (More DERs)
	Zero Carbon H2 Turbines *(secondary)*	Yes*	Yes*	Yes*	Limited (More DERs)
	Nuclear - Existing	Yes*	Yes*	Yes*	Yes*
	Nuclear - New	No	No	No	No
Transform existing gas capacity (non-OTC units)	Haynes, Scattergood, Harbor, Valley	No	Yes	Yes	Yes
Distributed Energy Resources (DERs)	Local Solar	1500 MW by 2035 (Reference)	2240 MW by 2035 (High)	2240 MW by 2035 (High)	2400 MW by 2035 (Highest)
	Local Energy Storage	Reference	High	High	Highest (Max DERs)
	Energy Efficiency	3210 GWh by 2035 (Reference)	4350 GWh by 2035 (High)	4350 GWh by 2035 (High)	4770GWh by 2035 (Highest)
	Demand Response	576 MW by 2035 (Moderate)	576 MW by 2035 (Moderate)	576 MW by 2035 (Moderate)	633 MW by 2035 (High)
	Building Electrification	Reference	High	High	Highest (Max DERs)
Renewable Energy Credits (RECs)	Financial Mechanisms (RECs/Allowances)	Yes	No	No	No
Transmission	New or Upgraded Transmission	Moderate	High	High (possible new corridors)	High

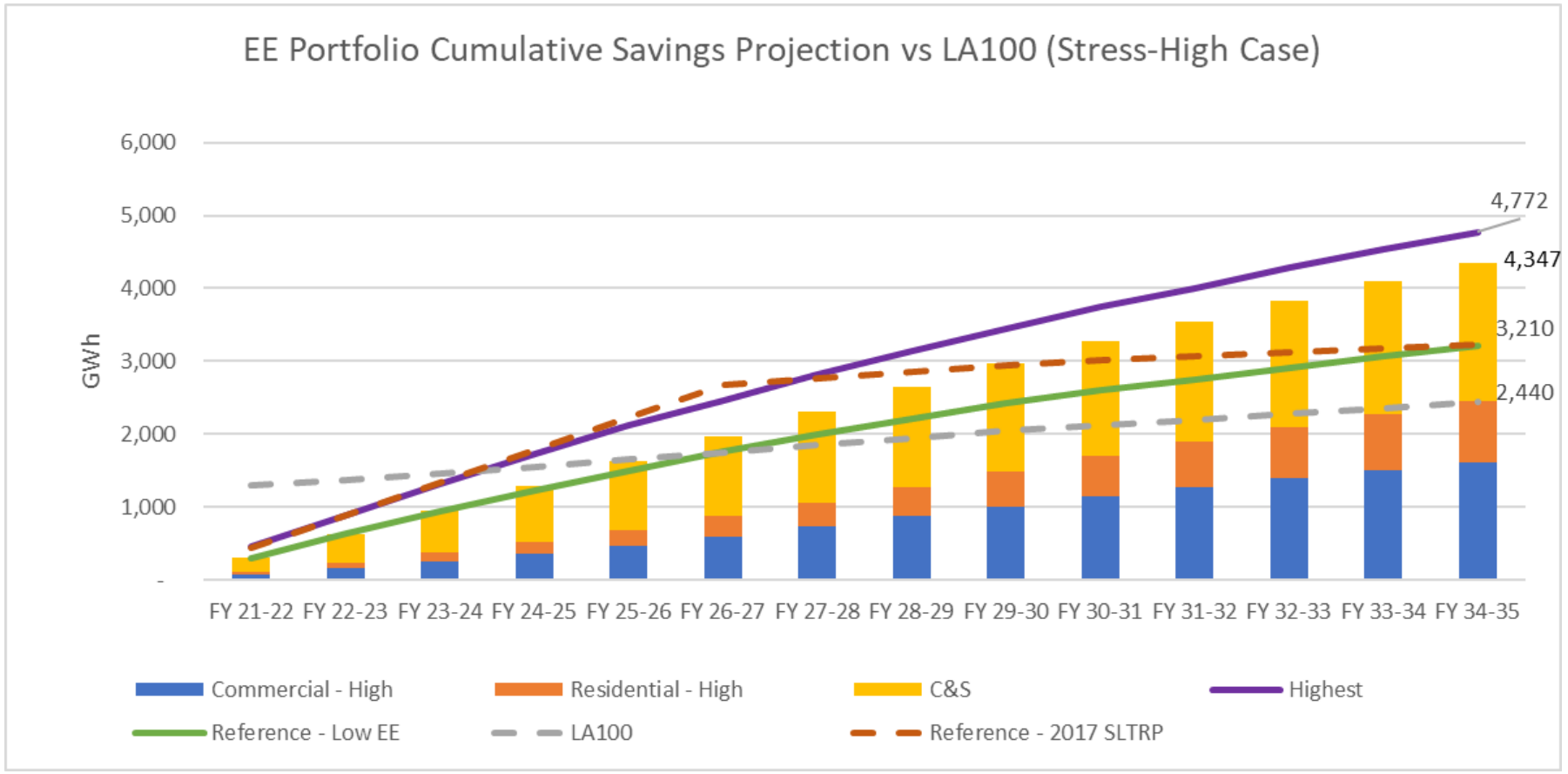
**Note: Optimal portfolio will be determined through the capacity expansion model*

Note: Zero carbon includes RPS + nuclear + large hydro + green hydrogen

Local Solar Scenarios *(preliminary)*



Energy Efficiency Scenarios *(preliminary)*



2022 SLTRP Price Sensitivities *(preliminary)*

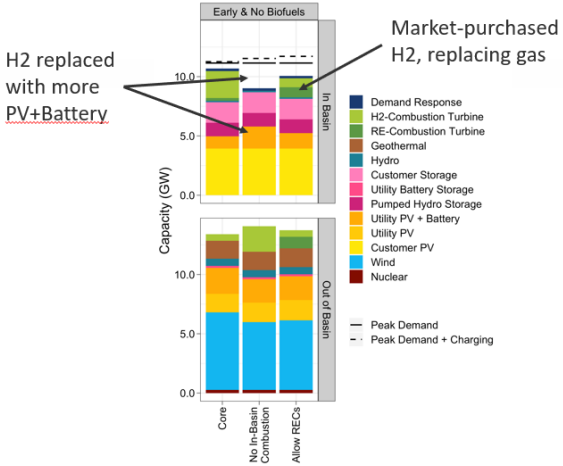
		Sensitivity Scenarios Applied to 100% carbon free by 2035 Scenarios
Fuel Prices**	Natural Gas, H2, etc.	High/low sensitivities
GHG Prices**	GHG Allowance Prices	High/low sensitivities
Storage Prices**	Li-Ion, flow, etc.	High/low sensitivities

**bookend scenarios to evaluate price sensitivities by matching low and high commodity prices:*

- ***Low Bookend:*** *Low natural gas prices, low hydrogen prices, low GHG prices, low energy storage prices*
- ***High Bookend:*** *High natural gas prices, high hydrogen prices, high GHG prices, high energy storage prices*

Recap of LA100 "No Combustion" Results

Early/No Biofuels Sensitivities: Disallowing combustion shifts capacity outside the basin



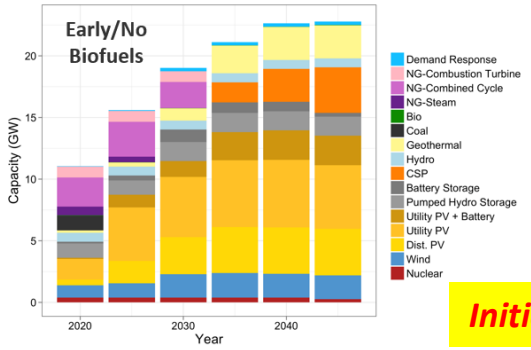
Greater reliance on out-of-basin resources requires more out- and in-basin transmission

Location	Core	No In Basin Combustion	Allow RECs
In Basin	468 MW 3 lines 24.8 km	1,457 MW 8 lines 90 km	143 MW 3 lines 38 km
Out of Basin	2,354 MW 3 lines 379 km	2,032 MW 2 lines 107 km	

Final Sensitivities

Restricting the eligibility of natural gas and biomass requires reliance on storage and other dispatchable renewable generation

EARLY RESULTS, NOT PART OF FINAL LA100 ANALYSIS



Initial Results

Initial Run – For Discussion Purposes Only; Subject to Change

Key Takeaways

- In-basin long-term dispatchable resources are used infrequently under *normal* grid conditions, but may be heavily relied upon during *stressed* grid conditions
- Lack of in-basin long-term dispatchable resources leads to increased reliance on the transmission system, which creates vulnerability to transmission outages
- Unexpected or low probability events (e.g. wildfires) can be very disruptive in systems with heavy reliance on transmission

What are "What-If" Sensitivities?

LA100 Study did not consider implementation risks

What-if sensitivities are more complex than price sensitivity scenarios

In order to address risk implications due to implementation and other factors outside of LADWP's control, the 2022 SLTRP will evaluate the impacts related to cost, emissions, and reliability.

Areas that are considered out of LADWP's control may include:

- Emerging Technologies
- Customer-sided programs based on participation
- Transmission timeline and permitting
- Load uncertainties due to electrification

2022 SLTRP What-If Sensitivities *(preliminary)*

		"What-if" Sensitivities Applied to Tentative Recommended Case (based on preliminary results)
Emerging Technologies	Zero Carbon Hydrogen Turbines	Not available until 2040 (slower deployment)
	No Combustion Alternatives	Hydrogen Fuel Cells
Demand Side Resources	Energy Efficiency	Substantially higher EE costs
	Demand Response	Reaching only half of the 576 MW of DR by 2035
Transmission	Transmission Upgrades (over 10 by 2030)	More difficult in-basin upgrades not completed by 2030
Load	Transportation/Building Electrification	Low Load and High Load

Q&A and Discussion

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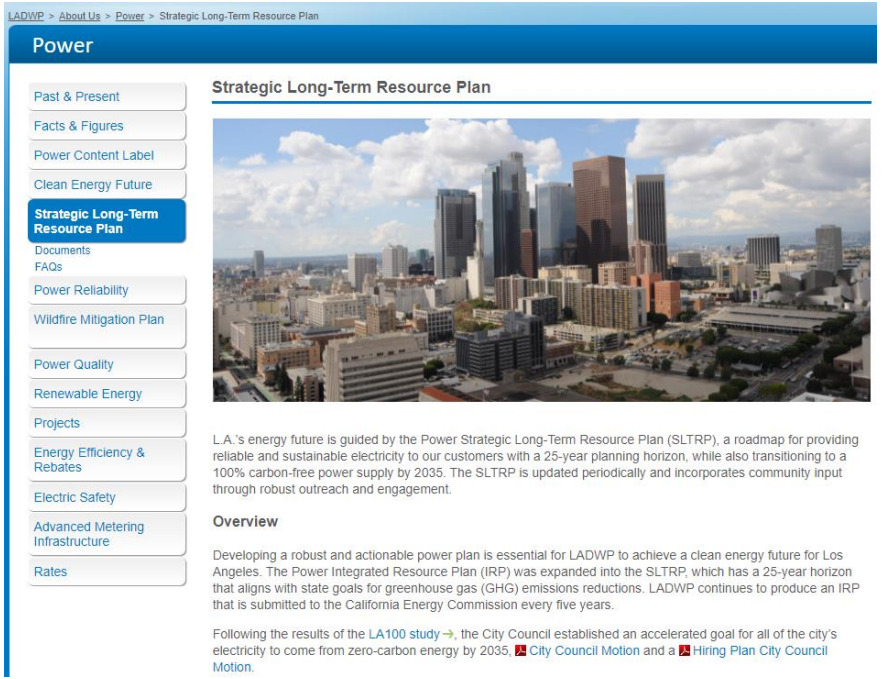
Communications & Public Affairs

- Website: ***ladwp.com/sltrp***
- Email address: ***powerSLTRP@ladwp.com***



Wrap Up & Next Meeting

Next Meeting:
December 17, 2021 (10 am to 12 pm)

Future Meeting:
February 2022

Website: www.ladwp.com/SLTRP
Email: powerSLTRP@ladwp.com