



SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
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www.scag.ca.gov

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Transportation
Sean Ashton, Downey

REMOTE PARTICIPATION ONLY

EMERGING TECHNOLOGIES COMMITTEE

Thursday, August 26, 2021
10:00 a.m. – 12:00 p.m.

To Participate on Your Computer:
<https://scag.zoom.us/j/941139378>

To Participate by Phone:
Call-in Number: 1-669-900-6833
Meeting ID: 941 139 378

***Please see next page for detailed
instructions on how to participate in the meeting.***

PUBLIC ADVISORY

Given recent public health directives limiting public gatherings due to the threat of COVID-19 and in compliance with the Governor's recent Executive Order N-29-20, the meeting will be held telephonically and electronically.

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Cecilia Pulido at (213) 630-1480 or via email at cpulido@scag.ca.gov. Agendas & Minutes are also available at: www.scag.ca.gov/committees.

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. SCAG is also committed to helping people with limited proficiency in the English language access the agency's essential public information and services. You can request such assistance by calling (213) 630-1480. We request at least 72 hours (three days) notice to provide reasonable accommodations and will make every effort to arrange for assistance as soon as possible.



Instructions for Public Comments

You may submit public comments in two (2) ways:

1. **Submit written comments via email to: ePublicComment@scag.ca.gov by 5pm on Wednesday, August 25, 2021.**

All written comments received after 5pm on Wednesday, August 25, 2021 will be announced and included as part of the official record of the meeting.

2. **If participating via Zoom or phone, during the Public Comment Period, use the “raise hand” function on your computer or *9 by phone and wait for SCAG staff to announce your name/phone number. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.**

If unable to connect by Zoom or phone and you wish to make a comment, you may submit written comments via email to: ePublicComment@scag.ca.gov.

In accordance with SCAG’s Regional Council Policy, Article VI, Section H and California Government Code Section 54957.9, if a SCAG meeting is “willfully interrupted” and the “orderly conduct of the meeting” becomes unfeasible, the presiding officer or the Chair of the legislative body may order the removal of the individuals who are disrupting the meeting.

OUR MISSION

To foster innovative regional solutions that improve the lives of Southern Californians through inclusive collaboration, visionary planning, regional advocacy, information sharing, and promoting best practices.

OUR VISION

Southern California’s Catalyst for a Brighter Future

OUR CORE VALUES

Be Open | Lead by Example | Make an Impact | Be Courageous



Instructions for Participating in the Meeting

SCAG is providing multiple options to view or participate in the meeting:

To Participate and Provide Verbal Comments on Your Computer

1. Click the following link: <https://scag.zoom.us/j/941139378>
2. If Zoom is not already installed on your computer, click “Download & Run Zoom” on the launch page and press “Run” when prompted by your browser. If Zoom has previously been installed on your computer, please allow a few moments for the application to launch automatically.
3. Select “Join Audio via Computer.”
4. The virtual conference room will open. If you receive a message reading, “Please wait for the host to start this meeting,” simply remain in the room until the meeting begins.
5. During the Public Comment Period, use the “raise hand” function located in the participants’ window and wait for SCAG staff to announce your name. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.

To Listen and Provide Verbal Comments by Phone

1. Call **(669) 900-6833** to access the conference room. Given high call volumes recently experienced by Zoom, please continue dialing until you connect successfully.
2. Enter the **Meeting ID: 941 139 378**, followed by #.
3. Indicate that you are a participant by pressing # to continue.
4. You will hear audio of the meeting in progress. Remain on the line if the meeting has not yet started.
5. During the Public Comment Period, press *9 to add yourself to the queue and wait for SCAG staff to announce your name/phone number. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.

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EMERGING TECHNOLOGIES COMMITTEE AGENDA

ETC - Emerging Technologies Committee *Members – August 2021*

1. **Sup. Curt Hagman**
Chair, San Bernardino County
2. **Hon. Sean Ashton**
Downey, RC District 25
3. **Hon. Drew Boyles**
El Segundo, RC District 40
4. **Hon. Margaret Clark**
Rosemead, SGVCOG
5. **Ms. Leslie Lindahl**
Government Relations, Ex-Officio Non-Voting Member
6. **Hon. Margaret Finlay**
Duarte, RC District 35
7. **Hon. Jan C. Harnik**
RCTC Representative
8. **Hon. Dan Kalmick**
Huntington Beach, OCCOG
9. **Hon. Steve Manos**
Lake Elsinore, RC District 63
10. **Mr. Paul Marquez**
Caltrans District 7, Ex-Officio Non-Voting Member
11. **Hon. Carol Moore**
Laguna Woods, OCCOG
12. **Hon. Frank Navarro**
Colton, RC District 6
13. **Ms. Pam O'Connor**
CA Road Charge TAC, Ex-Officio Non-Voting Member
14. **Sup. Luis Plancarte**
Imperial County
15. **Hon. David Pollock**
Moorpark, RC District 46

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EMERGING TECHNOLOGIES COMMITTEE AGENDA

- 16. Hon. Deborah Robertson**
Rialto, RC District 8
- 17. Hon. Cheryl Viegas-Walker**
El Centro, RC District 1
- 18. Hon. Alan Wapner**
SBCTA Representative
- 19. Hon. Edward Wilson**
Signal Hill, GCCOG
- 20. Hon. Frank Zerunyan**
Rolling Hills Estates, SBCCOG

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EMERGING TECHNOLOGIES COMMITTEE AGENDA

Southern California Association of Governments
Remote Participation Only
Thursday, August 26, 2021
10:00 AM

The Emerging Technologies Committee may consider and act upon any of the items listed on the agenda regardless of whether they are listed as information or action items.

CALL TO ORDER AND PLEDGE OF ALLEGIANCE

(The Honorable Curt Hagman, Chair)

PUBLIC COMMENT PERIOD

Members of the public are encouraged to submit written comments by sending an email to: ePublicComment@scag.ca.gov by 5pm on Wednesday, August 25, 2021. Such comments will be transmitted to members of the legislative body and posted on SCAG's website prior to the meeting. Written comments received after 5pm on Wednesday, August 25, 2021 will be announced and included as part of the official record of the meeting. Members of the public wishing to verbally address the Emerging Technologies Committee will be allowed up to 3 minutes to speak, with the presiding officer retaining discretion to adjust time limits as necessary to ensure efficient and orderly conduct of the meeting. The presiding officer has the discretion to reduce the time limit based upon the number of comments received and may limit the total time for all public comments to twenty (20) minutes.

REVIEW AND PRIORITIZE AGENDA ITEMS

CONSENT CALENDAR

Approval Items

1. Minutes of ETC Meeting - April 29, 2021

INFORMATION/DISCUSSION ITEMS

2. California State University Long Beach Survey Announcement 2 Mins.
(Marisa Laderach, Senior Regional Planner)
3. Accelerating the Deployment of Wireless Broadband Network 25 Mins.
(Randal Hernandez, Director of External Affairs, Verizon)
4. Introduction to Hyperloop Transportation Technologies, Inc. 25 Mins.
(Chuck Michael, P.E., Head of North American Feasibility Studies and Regulatory Advisor and Shelby Phillips, Head of North American Public Affairs Group, Hyperloop TT)

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EMERGING TECHNOLOGIES COMMITTEE AGENDA

5. Open Discussion of Future Emerging Technologies Committee Topics
(Tom Bellino, Senior Regional Planner)

60 Mins.

FUTURE AGENDA ITEMS

ANNOUNCEMENTS

ADJOURNMENT



Southern California Association of Governments
Remote Participation Only
August 26, 2021

**EMERGING TECHNOLOGIES COMMITTEE (ETC)
MINUTES OF THE MEETING
THURSDAY, APRIL 29, 2021**

THE FOLLOWING MINUTES ARE A SUMMARY OF ACTIONS TAKEN BY THE EMERGING TECHNOLOGIES COMMITTEE. A DIGITAL RECORDING OF THE MEETING IS AVAILABLE AT: <http://scag.ig2.com/Citizens/>.

The Emerging Technologies Committee (ETC) of the Southern California Association of Governments (SCAG) held its regular meeting telephonically and electronically given public health directives limiting public gatherings due to the threat of COVID-19 and in compliance with the Governor's recent Executive Order N-29-20. A quorum was present.

Members Present:

Hon. Sean Ashton	District 25
Hon. Drew Boyles	District 40
Hon. Margaret Clark	SGVCOG
Hon. Margaret E. Finlay	District 35
Hon. Curt Hagman (Chair)	San Bernardino County
Hon. Dan Kalmick	Hunington Beach, OCCOG
Hon. Leslie Lindahl	Ex-Officio Non-Voting Member
Mr. Paul Marquez, Caltrans District 7	Ex-Officio Non-Voting Member
Hon. Carol Moore	OCCOG
Hon. Pam O'Connor, CA Road Charge TAC	Ex-Officio Non-Voting Member
Hon. Alan Wapner	SBCTA
Hon. Edward H.J. Wilson	GCCOG

Members Not Present:

Hon. Jan Harnik	RCTC
Hon. Steve Manos	District 63
Hon. Frank Navarro	District 6
Hon. Luis Plancarte	Imperial County
Hon. David Pollock	District 46
Hon. Deborah Robertson	District 8



Hon. Cheryl Viegas-Walker
Hon. Frank Zerunyan

District 1
SBCCOG

CALL TO ORDER & PLEDGE OF ALLEGIANCE

Chair Curt Hagman, San Bernardino County, called the meeting to order at 10:00 a.m. and led the Pledge of Allegiance.

PUBLIC COMMENT

Chair Hagman opened the Public Comment Period. SCAG staff confirmed that there were no public comments submitted via email to ePublicComment@scag.ca.gov. Seeing there were no public comment speakers, Chair Hagman closed the Public Comment Period.

CONSENT CALENDAR

Approval Items

1. Minutes of ETC Meeting – October 29, 2020
2. Minutes of ETC Meeting – February 25, 2021

A MOTION was made (Finlay) to approve the Consent Calendar. The motion was SECONDED (Moore) and passed by the following votes:

AYES: ASHTON, CLARK, FINLAY, HAGMAN, MOORE, WAPNER (6)

NOES: None (0)

ABSTAIN: KALMICK (1)

INFORMATION/DISCUSSION ITEMS

3. Older Adults and New Mobility/Autonomous Vehicles

Laura Fraade-Blonar, RAND Corporation, reported on older adults and their use of autonomous vehicles. Ms. Fraade-Blonar stated there are different levels of autonomous vehicles with varying levels of driver assist. She noted there are several factors including societal which affect demand including frequency of cell phone usage. Other elements can include physical barriers and safety concerns as well as access to technology locally. Many of the barriers have little to do with the automated vehicle function. Further, she examined the lack of a trusted advocate on the subject

and noted there are many outstanding questions on the safety and use of autonomous vehicle technology by older adults.

4. Getting to 5G for All

Tyler Gentry, T-Mobile, reported on their effort in rolling out 5G and stated the goal is to have 99% US coverage by 2026. He noted components include low, mid and dense band data flow. Further, current and pending permitting actions was discussed. Mr. Gentry noted the network will include access for school systems to bring the technology to more users. He also reviewed recent legislation requiring greater system resilience and potential applications for 5G.

5. SCAG Tools Underway – Regional Data Platform, SoCal Greenprint, Local Information Services Team

Caitlin Smith, ESRI, introduced the Regional Data Platform. She noted emerging regional challenges require a local driven approach. Further, local jurisdiction general plans are at the core of regional goals and they often lack the resources for general plan development. She noted the RDP has been developed in cooperation with member cities and is a suite of tools to empower local planning efforts. The Regional Information Hub serves as a central collection point for data. In addition, several other mapping and planning tools will support planning efforts including the HELPR tool and Greenprint.

Next Abigail Ramsden, The Nature Conservancy, reviewed the Greenprint tool. She noted the tool is under development including a robust outreach effort. Tom Vo, SCAG staff, reviewed the HELPR tool.

FUTURE AGENDA ITEMS

Hon. Carol Moore, Laguna Woods, suggested an exploration of generator technology.

ADJOURNMENT

There being no further business, Chair Curt Hagman, San Bernardino County, adjourned the meeting at 12:10 p.m.

[MINUTES ARE UNOFFICIAL UNTIL APPROVED BY THE EMERGING TECHNOLOGY COMMITTEE]

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AGENDA ITEM 2
REPORT

Southern California Association of Governments
Remote Participation Only
August 26, 2021

To: Emerging Technologies Committee (ETC)

EXECUTIVE DIRECTOR'S
APPROVAL

From: Thomas Bellino, Senior Regional Planner
(213) 236-1830, bellino@scag.ca.gov

Subject: California State University Long Beach Survey Announcement

RECOMMENDED ACTION:

Information Only – No Action Required

STRATEGIC PLAN:

This item supports the following Strategic Plan Goal 2: Advance Southern California’s policy interests and planning priorities through regional, statewide, and national engagement and advocacy. 6: Deploy strategic communications to further agency priorities and foster public understanding of long-range regional planning.

EXECUTIVE SUMMARY:

Dr. H. Michael Chung with the Department of Information Systems at California State University Long Beach is conducting an academic research project related to identifying factors that contribute to successful smart cities. He is seeking participation from SCAG elected officials that have experience working on smart city initiatives and are willing to complete a survey. Marisa Laderach, Senior Regional Planner at SCAG, will talk very briefly about the survey to the ETC.

BACKGROUND:

Dr. Chung (CSU Long Beach) is conducting an academic research project focusing on the impact of smart city initiatives, and specifically the way these initiatives affect public service quality, efficiency, operational agility, and the overall success of smart cities. He is seeking participation from SCAG elected officials that have experience working on smart city initiatives and are willing to contribute to this important research project. Research findings will be ultimately shared with participants and provide evidence-based guidance to smart city stakeholders throughout the region.

The short survey aims to capture individual perceptions of the key factors leading to smart city success, primarily through open-ended questions with no right or wrong answers. Personal thoughts, observations, and insights are invaluable. Dr. Chung’s team will assure your privacy and will not share your personal information or survey responses with others. Following the completion



of the Survey Study, participants may be invited to participate in a Delphi Study to help build consensus on factors and impacts. SCAG will communicate next steps and share the survey link formally through the CRM system, and we encourage any elected official that has experience in this topic area to participate and help CSU Long Beach better understand successful smart city initiatives in our region.

FISCAL IMPACT:

No fiscal impact. SCAG is serving in its role as a regional convener to simply notify potential survey participants about this opportunity to further advance smart city research in the SCAG region.



AGENDA ITEM 3
REPORT

Southern California Association of Governments
Remote Participation Only
August 26, 2021

To: Emerging Technologies Committee (ETC)

EXECUTIVE DIRECTOR'S
APPROVAL

From: Thomas Bellino, Senior Regional Planner
(213) 236-1830, bellino@scag.ca.gov

Subject: Accelerating the Deployment of Wireless Broadband Network

RECOMMENDED ACTION:

Information Only – No Action Required

STRATEGIC PLAN:

This item supports the following Strategic Plan Goal 1: Produce innovative solutions that improve the quality of life for Southern Californians. 2: Advance Southern California’s policy interests and planning priorities through regional, statewide, and national engagement and advocacy. 4: Provide innovative information and value-added services to enhance member agencies’ planning and operations and promote regional collaboration.

EXECUTIVE SUMMARY:

Randal Hernandez, Director of External Affairs for Verizon, will provide an overview of 5G technology applications for residents, business and government, as well as an overview of wireless broadband network operations. Director Hernandez will also provide recommendations for municipalities to work collaboratively with the industry to expedite the deployment of the broadband infrastructure.

BACKGROUND:

Broadband has become an essential infrastructure for the 21st century. However, broadband can only deliver benefits those who have access to connect, can afford it, and know how to use it. According to the Census – American Community Survey, within the SCAG region alone, approximately 10 percent of all households do not have adequate internet speeds or have no internet access at all. These households are disproportionately located in low income and rural areas and the populations are predominantly Black, Latino or Senior Citizens.

Following the signing of Governor Newsom’s executive order on Broadband, SCAG passed a resolution in February 2021 to recognize the digital divide throughout Southern California and to emphasize collaboration between government agencies and the private sector. The goal of the



resolution is to streamline permitting and other processes required to increase access to and adoption of broadband service in the SCAG region.

Since then, SCAG and its member agencies have been working with internet service providers (ISPs) to determine the best path forward to achieving full broadband adoption in the region. Verizon, as a major ISP, will be a critical partner in this effort. The ETC will learn more about Verizon's plans for 5G and will have the opportunity to make important connections between the public and private sectors.

FISCAL IMPACT:

None.

ATTACHMENT(S):

1. PowerPoint Presentation - Verizon Broadband

SCAG Emerging Technology Committee

Randal Hernandez
External Affairs
State & Local Government Relations
August 26, 2021



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Safe Harbor Statement

NOTE: In this presentation we have made forward-looking statements. These statements are based on our estimates and assumptions and are subject to risks and uncertainties. Forward-looking statements include the information concerning our possible or assumed future results of operations. Forward-looking statements also include those preceded or followed by the words “anticipates,” “believes,” “estimates,” “expects,” “hopes” or similar expressions. For those statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995. We undertake no obligation to revise or publicly release the results of any revision to these forward-looking statements, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. The following important factors, along with those discussed in our filings with the Securities and Exchange Commission (the “SEC”), could affect future results and could cause those results to differ materially from those expressed in the forward-looking statements: adverse conditions in the U.S. and international economies; the effects of competition in the markets in which we operate; material changes

in technology or technology substitution; disruption of our key suppliers’ provisioning of products or services; changes in the regulatory environment in which we operate, including any increase in restrictions on our ability to operate our networks; breaches of network or information technology security, natural disasters, terrorist attacks or acts of war or significant litigation and any resulting financial impact not covered by insurance; our high level of indebtedness; an adverse change in the ratings afforded our debt securities by nationally accredited ratings organizations or adverse conditions in the credit markets affecting the cost, including interest rates, and/or availability of further financing; material adverse changes in labor matters, including labor negotiations, and any resulting financial and/or operational impact; significant increases in benefit plan costs or lower investment returns on plan assets; changes in tax laws or treaties, or in their interpretation; changes in accounting assumptions that regulatory agencies, including the SEC, may require or that result from changes in the accounting rules or their application, which could result in an impact on earnings; the inability to implement our business strategies; and the inability to realize the expected benefits of strategic transactions.

As required by SEC rules, we have provided a reconciliation of the non-GAAP financial measures included in this presentation to the most directly comparable GAAP measures in materials on our website at www.verizon.com/about/investors



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Discussion Items

- 1. Public & Private Commitments to Expand Broadband**
- 2. Increasing Need for Better Wireless Infrastructure**
5G Transformation
- 3. What Is a Wireless Broadband Network**
- 4. Accelerating the Deployment of Wireless Broadband**



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Thank You SCAG Regional Council!



REGIONAL COUNCIL ADOPTS RESOLUTION TO ESTABLISH A BROADBAND ACTION PLAN

PRESS RELEASE FEBRUARY 4, 2021

The nation's largest metropolitan planning organization on Thursday committed to helping its 191 cities and six counties bridge the digital divide and increase broadband access in underserved communities throughout Southern California.



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VERIZON “Accelerating America”

It’s time for a bold, new national strategy to close America's digital divide. *January 22, 2021*

We believe it’s time for Congress to take bolder steps to Accelerate America by providing long-term funding for broadband connectivity in a way that gives Americans more choices and more resources.

We’re proposing a new public policy approach that asks Congress to provide long-term financial support for broadband services in three areas: affordability, adoption, and access. This comprehensive approach, which builds on prior efforts to close the digital divide and supplements existing programs, will help empower all Americans to thrive in the digital age.

More info at: www.verizon.com/acceleratingamerica.



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Digital Inclusion - Verizon



Address barriers and enable connectivity to those who need it most.

Access, Affordability, and Application.

10M youths provided with digital skills training by 2030.

- Verizon Innovative Learning
- K-12 Education Platform

1M small businesses provided with resources to help them thrive in the digital economy by 2030.

- Small Business Training Program
- Black and LatinX Tech Accelerator Programs







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Verizon Innovative Learning Schools

Comprehensive Model




Transforming schools by providing technology, connectivity, STEM curriculum, and teacher training to enable students to develop the skills, knowledge, and capabilities needed to thrive in the digital world. Our 264 Title I middle and high schools receive:

-  Technology for every student and teacher with up to 4 years of internet access
-  Device insurance, content filtering, and mobile device management software
-  Comprehensive professional development and a dedicated on-site instructional coach
-  Next-gen curriculum and eligibility for innovative learning labs and 5G access



Connect Model

In addition to our current model, we are launching a flexible option for schools in response to immediate needs due to the Covid-19 pandemic. This new model will provide an additional 200 Title I schools with:

-  Filtered mobile hotspots with up to 4 years of internet access for any student in need
-  Flexible, asynchronous teacher training pathways and an onsite VILS liaison
-  Eligibility for Verizon Innovative Learning Labs and 5G access

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Increasing need for wireless broadband; 5G Transformation



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Increasing Need for Better Wireless Infrastructure in cities

Reliability in a Crisis



With over 80% of 9-1-1 calls now coming from cell phones...¹

Access to Medical Care



The telehealth market in the United States (US) is estimated to display staggering seven-fold growth by 2025, resulting in a five-year compound annual growth rate (CAGR) of 38.2%. In 2020, the telehealth market is likely to experience a tsunami of growth, resulting in a year-over-year increase of 64.3%.²

Access to Education



600+ school districts replaced text books with tablets in classrooms³

Access to City Services



Access to needed City services that are easily available online such as: MyLA311, Hire LA's Youth online applications, access to HCID (Housing & Community Investment Dept.) LA's Services for housing, domestic violence support, etc.

1. National Emergency Number Association, Enhancing 9-1-1 Operations With Automated Abandoned Callback & Location Accuracy (Motorola Solutions) (August 23, 2018)
2. <https://ww2.frost.com/news/press-releases/telehealth-to-experience-massive-growth-with-covid-19-pandemic-says-frost-sullivan>
3. CTIA's Infographics Today's Wireless Family, October, 2017



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Why are we expanding the wireless network?

39_{GB}
of data per month

Mobile data traffic per smartphone will rise from 7 GB per month in 2018 to 39 GB per month in 2024.¹

57%
are now wireless

Around 57 percent of American households are now wireless only for voice service.²

31
billion devices

It is projected that there will be 31 billion connected devices by 2023.³

More people than ever before rely on wireless connections to manage their lives and businesses.

Verizon is expanding its wireless network to meet the growing demands of today and tomorrow.

But it takes time.



1. Ericsson Mobility Report, June 2019
2. CDC's 2016 Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July-December
3. CTIA Infographics, January 2020



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Comparing the Gs

What's the difference between 5G and the other Gs?

1G

Voice

We first talk without wires - on the move, with analog technology.

2G

SMS

SMS (text) messaging debuts bringing us a new way to chat, creating a new language to chat with.

3G

Data & Apps

We begin sharing snapshots of our lives by sending images thanks to higher data transfers.

4G

Video & Speed

Video calls and new businesses are possible with wireless internet on our smart devices.

5G

Transformation

With 5G, the possibilities are limitless. **The low latency, high bandwidth combination will enable advancements in technology such as augmented and virtual reality, autonomous cars and connected cities.**

5G gives us massive amounts of data transfer (due to the bandwidth of the spectrum) with very low latency (delay or lag time, in layman's terms).

From wireless home internet to AR/VR to mobile gaming and more, 5G will change how we live, learn, work and play.



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5G Ultra Wideband expected capabilities vs. 4G LTE



Phone



Mobile router



Tablet

5G[✓] Ultra Wideband



Potential >10 Gbps peak data rates



Higher mobile data volumes



Potential <10 ms latency



10 to 100x connected devices



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5G Home & Business Internet



Ultra-fast Wi-Fi Connection

Keep your devices connected with internet received directly through your window.



Up to Gigabit Speeds

Reliable, lightning-fast 5G Home Internet with typical speeds of 300 Mbps.



Do it all with Ultra-low Lag

Streamline your favorite entertainment, video chat, and game, all at the same time.



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5G Ultra Wideband use cases

Phase 1 5G Home 2018



Home broadband

Phase 2 Mobile 2019



Smartphones, tablets and hotspots



Business broadband

Phase 3

Massively connected products, apps and services 2020 and beyond



Cloud AR/VR



Autonomous vehicles



Remote medical diagnostics



Industrial automation



Video surveillance



Smart cities



Logistics and supply chain



Intelligent energy



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Wireless Broadband Network



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Network Architecture



Macro Cells

High-power “macro” towers help keep network signal strong across large distances



Small Cells

Small cells are wireless transmitters and receivers that provide network coverage over shorter distances. Small cells help deploy the high frequency millimeter waves of 5G UW to more densely populated areas.



Fiber

Fiber allows carriers to process a higher volume of data at extremely high speed and low latency.

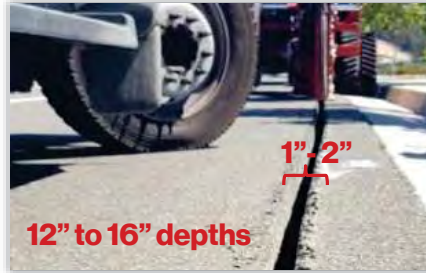


Microtrenching – New Fiber Deployment Technology



One Pass

No closing down the street for days or placing steel plates. One machine will in one pass cut, lay, vacuum, and fill the trench.



Minimal Impact

Less dust and no extra dump trucks or backhoes needed on-site. Narrowband trenching allows residents and businesses to operate normally with little disruption to them. *(avoids most existing utilities)*



Less Delay

The site of narrowband trenching is drivable the same day, normally within 2 hours of completion.



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Attachment: PowerPoint Presentation - Verizon Broadband (Accelerating the Deployment of Wireless Broadband Network)

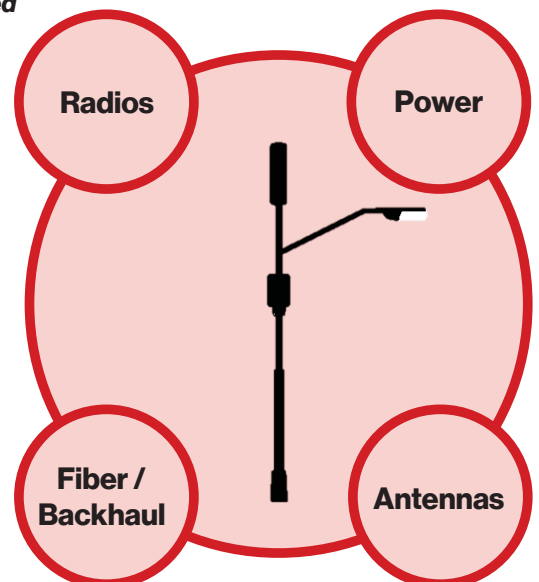
What are Small Cells?



“Small cells are wireless transmitters and receivers designed to provide network coverage to smaller areas. So while tall, high-power “macro” towers keep the network signal strong across large distances, small cells suit more densely developed environments like cities.”¹



Small Cell Requirements



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1-www.verizon.com

18

Example: Completed Site



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C-Band / Verizon Nationwide

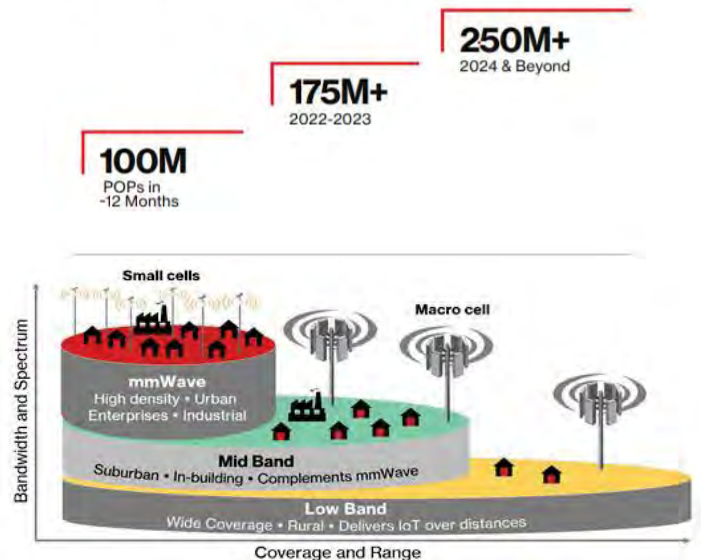
C-Band Deployment Plan – Covered POPs

C-Band Auction Results

- 140 -200 MHz in every market
- Average 161 MHz C-Band depth across the US
- Contiguous across the US

Network Build Plan

- \$10B C-Band capital spending plan over 3 years
- Initial C-Band build on existing infrastructure
- 7K-8K C-Band equipped cell sites in 2021
- 14K+ additional mmWave cell sites in 2021
- 30K+ total by YE
- Over time, 50% of urban traffic expected on mmWave



Accelerating Deployment of Wireless Broadband



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21

Attachment: PowerPoint Presentation - Verizon Broadband (Accelerating the Deployment of Wireless Broadband Network)

Expanding Public-Private Partnerships

The SCAG resolution adopted directs staff to develop a Broadband Action Plan, which would include:

- Developing a model resolution and policy paper for local jurisdictions, addressing the digital divide.
- Pursuing grant funding opportunities and partnerships to assist local jurisdictions with broadband implementation.
- Convening a working group to develop ways to facilitate rapid deployment of broadband technology such as streamlining the permit process, lowering fees to a reasonable level, and reducing the cost of entry and operation of broadband systems within underserved communities.



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Recommendations to Expand Public – Private Partnerships

Reflecting the SCAG resolution, municipalities and industry working collaboratively to:

- Align municipal small cell regulations and standards with the Federal Communications Commission (FCC) 2018 Infrastructure Order for Rights of Way.
- Expedite the deployment of mid-band “macro” facilities requiring retrofitting (primarily private property).
- Provide access to public facilities (fleet/service yards, public safety facilities, municipal office buildings, parks) to expand coverage for new wireless facilities.
- Streamline permitting and processes. Update codes to designate “By Right” or “permitted use” zones where permits are approved on a ministerial basis.
- Expand community education to community stakeholders to emphasize the value of wireless broadband network and address the “myths and facts.”
- Provide for “open access” to State (or federally) funded “middle mile” broadband network.



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Thank You.

Randal Hernandez

Randal.Hernandez@Verizon.com



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AGENDA ITEM 4
REPORT

Southern California Association of Governments
Remote Participation Only
August 26, 2021

To: Emerging Technologies Committee (ETC)

EXECUTIVE DIRECTOR'S
APPROVAL

From: Thomas Bellino, Senior Regional Planner
(213) 236-1830, bellino@scag.ca.gov

Subject: Introduction to Hyperloop Transportation Technologies, Inc.

RECOMMENDED ACTION:

Information Only – No Action Required

STRATEGIC PLAN:

This item supports the following Strategic Plan Goal 1: Produce innovative solutions that improve the quality of life for Southern Californians.

EXECUTIVE SUMMARY:

Chuck Michael and Shelby Phillips of Hyperloop Transportation Technologies, Inc. (HyperloopTT) will introduce the Emerging Technologies Committee to their tunnel technology, what they call the first new mode of transportation in over 100 years.

BACKGROUND:

Emissions, congestion and road wear are just some of the myriad negative impacts of the high number of vehicles miles traveled (VMT) by personal and freight vehicles in Southern California.

HyperloopTT, based in Los Angeles, designs hyperloop systems for the transport of passengers, light freight, and cargo containers traveling at aircraft speeds on the ground. Using proprietary passive magnetic levitation system in a pressure reduced environment, HyperloopTT states they have designed an efficient transport system that produces no emissions, creates no noise or vibration, and can be built underground to optimize the selected route while avoiding surface disruption and delays.

Note that the attached slide deck has more slides than will be presented today and are provided as additional reference. ETC members are encouraged to review the slides ahead of time to get the most out of the presentation. Additionally, there are two videos embedded in the slides, and they are indicated with a large red “play” arrow on the page. Simply click on the page and the video will play from the HyperloopTT YouTube Channel. There is also a slide at the end of the presentation with additional assets that ETC members may be interested in.

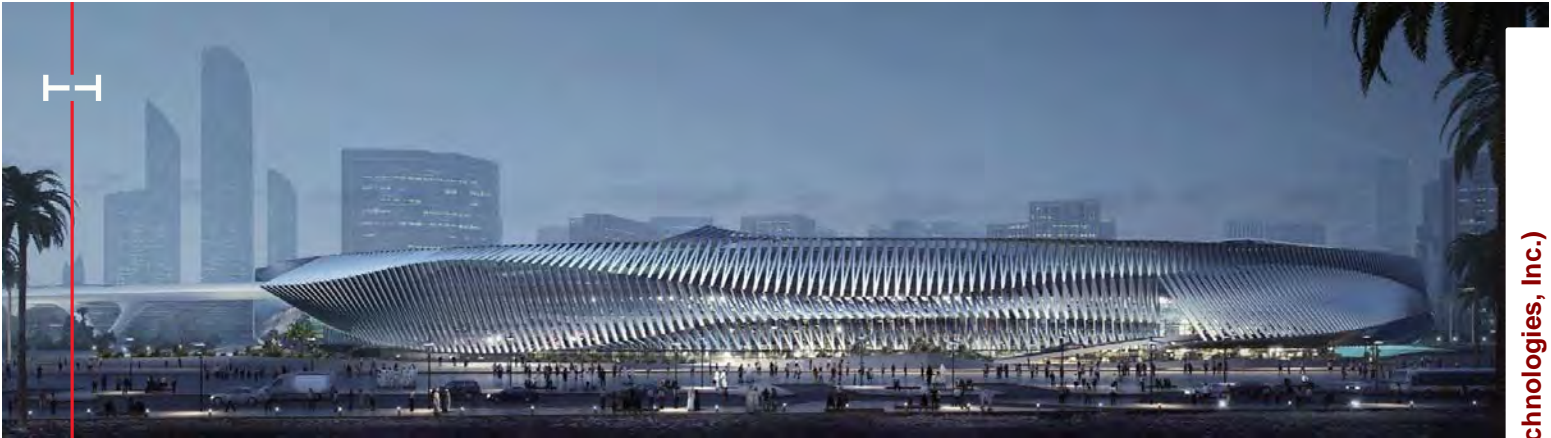


FISCAL IMPACT:

None.

ATTACHMENT(S):

1. PowerPoint Presentation - HyperloopTT



HYPERLOOP TT

Strictly Confidential

2021 Copyright Hyperloop Transportation Technologies, Inc.

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HYPERLOOP TT

Confidential and Proprietary



AUGUST 26 | 2021

Southern California Association of Governments

HYPERLOOP TT

Attachment: PowerPoint Presentation - Hyperloop TT (Introduction to Hyperloop Transportation Technologies, Inc.)

Introduction to Hyperloop Transportation Technologies



Chuck Michael, P.E.
North American Feasibility Studies & Regulatory Advisor
Hyperloop Transportation Technologies



Shelby Phillips, IOM
North American Public Affairs
Hyperloop Transportation Technologies

HYPERLOOPTT



Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)

4



What will define the next era of human mobility?

 1769



 1812



 1903



HYPERLOOPTT

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5



HIGH - SPEED
 EFFICIENT
 SAFE
 SUSTAINABLE
 FRICTIONLESS
 PROFITABLE
 TRANSPORTATION

HYPERLOOPTT



6



Introducing
 the hyperloop

HYPERLOOPTT



Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)



The next era of **human mobility**

EFFICIENT



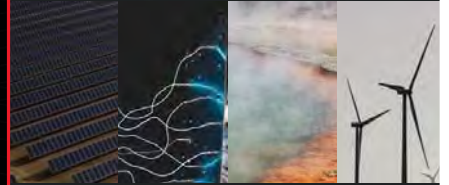
- Redefines distance
- Profitable
- Reduced operational costs

PASSENGER-CENTRIC



- Safety & certification
- Passenger health and wellness
- Fully-connected travel

SUSTAINABLE



- Pollution reduction
- Renewably powered
- Built for the future

HYPERLOOPTT

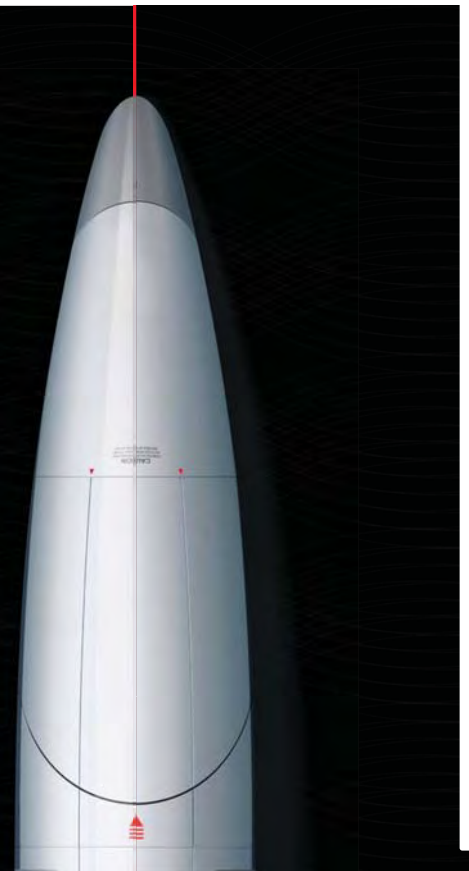
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AT THE FOREFRONT OF THE INDUSTRY

HyperloopTT technology

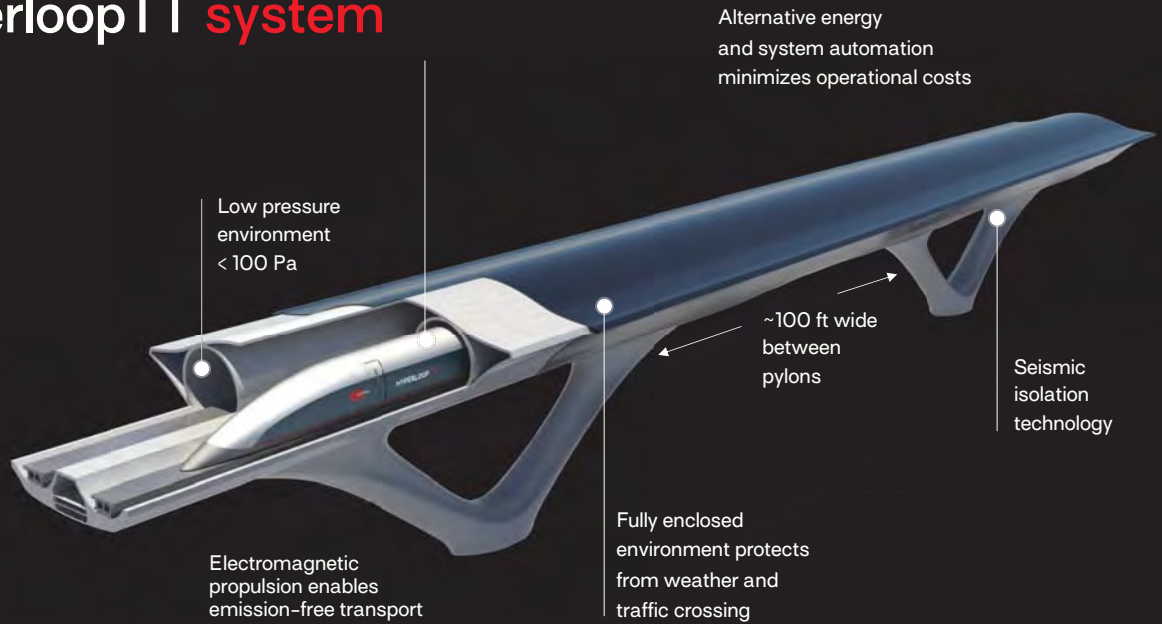
HYPERLOOPTT



Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)



HyperloopTT system

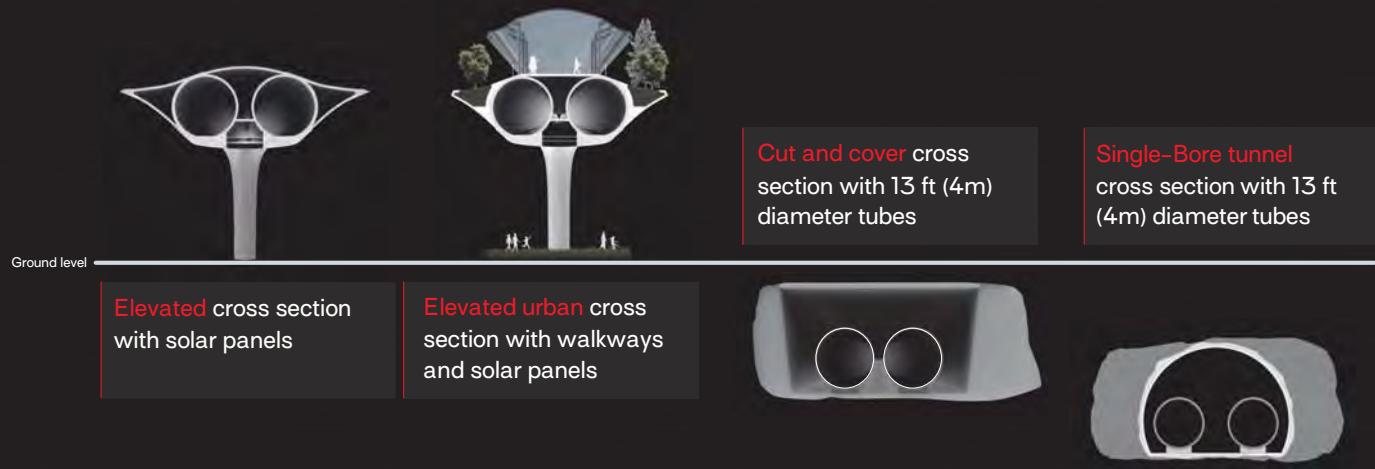


HYPERLOOPTT

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Adaptable infrastructure



HYPERLOOPTT

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Light freight & passenger capsule

Full-scale infrastructure location: Toulouse, France R&D Center



HYPERLOOPTT

COMPONENTS & PARTNERS

- Carbon-fiber capsule fuselage manufactured in Spain by Airtificial
- Capsule designed with PriestmanGoode
- In-house development of passenger technologies underway

KEY ADVANTAGES

- Strong, lightweight structure with aviation-grade materials and embedded sensors
- Passenger capacity enables operational flexibility to meet demand in real-time
- Technologies to support passenger wellness
- Flexibility to collaborate with operators on specific capsule interior design

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Tube system

Full-scale infrastructure location: Toulouse, France R&D Center



HYPERLOOPTT

COMPONENTS & PARTNERS

- 4-meter diameter (13 foot) tubes create a corridor for capsules to travel through
- Dual-tube system with unidirectional flow of capsules
- Elevated on pylons, at grade, or below ground as needed

KEY ADVANTAGES

- Enclosed tube infrastructure protects from weather and track obstructions
- Smaller diameter compared to traditional transportation infrastructure
- Flexibility to adapt to the environment including multi-functional approach to energy collection, provide urban, suburban and rural amenities

Confidential and Proprietary



Plug-in vacuum technology

Full-scale vacuum system location: Toulouse, France R&D Center



HYPERLOOPTT

COMPONENTS & PARTNERS

- Co-developed with inventor of the vacuum Leybold
- Modular vacuum solution creates, maintains and controls low-pressure environment
- Housed at utility stations spaced at 10 km (6.2 mile) intervals along the route

KEY ADVANTAGES

- Plug-in solution housed in a standard shipping container for simple maintenance
- Energy-efficient pump down process with redundant capacity
- Tube sections may be quickly isolated and repressurized as needed for tube/track maintenance and passenger safety

Confidential and Proprietary



Propulsion and levitation

Full-scale levitation and propulsion testing location: San Diego, California



HYPERLOOPTT

COMPONENTS & PARTNERS

- Proprietary Inductrack™ passive magnetic levitation
- Exclusive license from Lawrence Livermore National Laboratory
- Recruited original engineers to evolve system components for hyperloop travel
- Linear synchronous motor powers 0.1 G acceleration

KEY ADVANTAGES

- Highly-efficient passive magnetic levitation decreases energy requirements by levitating capsules over an unpowered, but conductive track
- Fail-safe technology gradually decelerates upon malfunction
- Building on over 20 years of Inductrack™ system development at Lawrence Livermore National Labs
- High-speed motor efficiency

Confidential and Proprietary



Isolation safety valve

Full-scale manufacturing and testing location: Elk Grove, California



HYPERLOOP TT

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COMPONENTS & PARTNERS

- Large-scale, low-pressure gate isolation safety valves built with partner GNBvac
- Valves can open/close in 60 seconds
- Efficiently isolates the 4-meter diameter (13 foot) tube infrastructure

KEY ADVANTAGES

- Intended to isolate and repressurize sections of the tube infrastructure back to atmospheric levels
- Allows overnight maintenance of 10 km tube segments
- Enables evacuation in redundant safety scenarios



Multi-modal integrated station

Sustainable and responsive station design for commercial systems



HYPERLOOP TT

Confidential and Proprietary

COMPONENTS & PARTNERS

- Commercial system designs developed in collaboration with Dar Group
- On-demand boarding system
- 3,600 passengers per hour
- 180 people per hour managed at every gate
- 20 minutes for light inspection and (un)boarding

KEY ADVANTAGES

- Loop layout ensures efficient operation
- Low thermal footprint
- Easily built into the existing infrastructure
- Convenient to build within the city
- Targets the highest LEED and BREEAM ranking
- Station's energy systems integrate with infrastructure's energy collection, storage and transfer system



Breakthrough cargo solution Introducing HyperPort



HYPERLOOPTT

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ECO-FRIENDLY

The hyperloop system is emission free with the potential to be net energy positive, creating the first, self-sustaining, non-polluting transport solution.

FAST

Hyperloop's ability to reach airplane speeds will make it the fastest ground cargo solution at the cost of rail.

RELIABLE

Hyperloop tube-based structure prevents it from experiencing weather effects or dealing with objects on the track making it the most reliable cargo solution.

SCALABLE

The frequency of departing capsules and speeds reached enable both scalability and high volumes.

FLEXIBLE

The single container per capsule nature of the system combined with automatization makes it highly flexible.



Sustainable cargo solution

Full-scale cargo prototype location: Hamburg, Germany R&D Center



HYPERLOOPTT

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COMPONENTS & PARTNERS

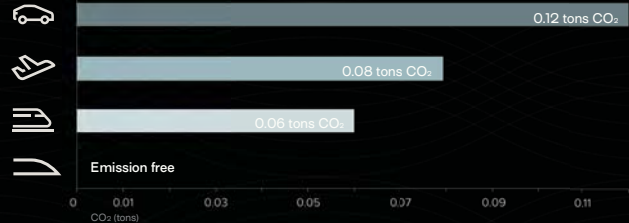
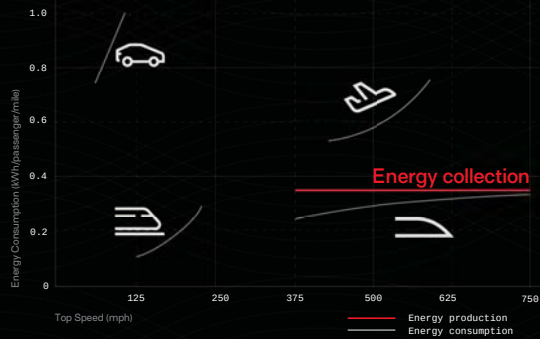
- Integrating hyperloop technology with leading port automation partner HHLA
- Standardized cargo containers
- Off-dock terminal solution for cargo distribution with integrated first/last mile autonomous vehicles

KEY ADVANTAGES

- Speed, reliability, sustainability
- Expands port capacity, while reducing local congestion, carbon emissions and coastal land usage
- Autonomous offloading and distribution of standard shipping containers increases port efficiency and profitability



HyperloopTT is building the most energy-efficient form of travel



Hyperloop moves at airplane speeds with high-speed rail efficiency. By incorporating renewable energy production like solar panels, hyperloop can generate more energy than it consumes within a year.

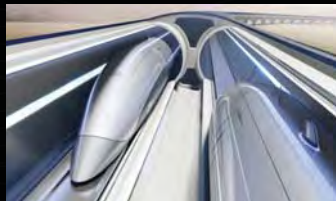
Based on the forecasted travel demand along the corridor, Carbon Dioxide (CO2) emissions will be reduced by 14.3 million tons when implementing a HyperloopTT transportation system.

HYPERLOOPTT

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Human-centric & safe by design



SAFETY BY DESIGN

- ➔ Autonomous control
- ➔ Enclosed environment
- ➔ Immune to weather conditions
- ➔ No grade crossings with traffic
- ➔ Sensing and safety innovations



SEAMLESS PASSENGER EXPERIENCE

- ➔ Contactless travel
- ➔ Immersive environment
- ➔ Augmented physical and digital experience
- ➔ Fuse comfort with entertainment

FRICTIONLESS TRAVEL

Biometric sensors
Realtime monitoring

Contactless travel
Automated ticketing & security

Advanced air purification
Air purifier

Rapid disinfecting cleaning
UV-C tech

HYPERLOOPTT

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Sustainable and emissions-free

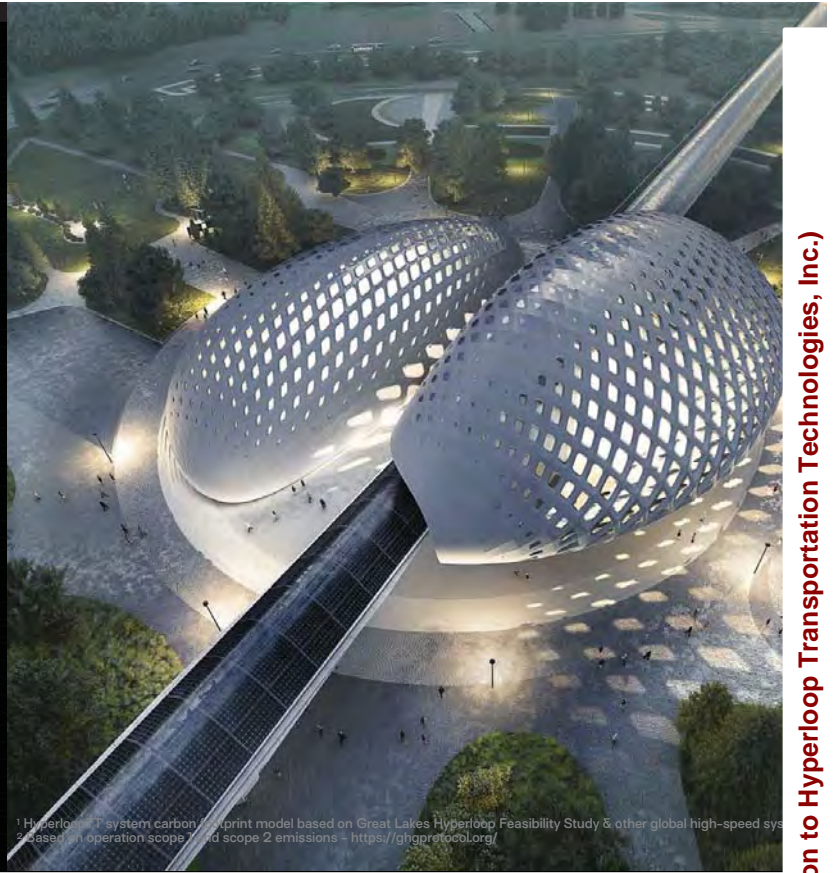
The HyperloopTT system is among the lowest emissions transport options available, with under **20 g CO₂/pkm**¹.

Hyperloop has a minimal physical footprint and environmental impact with **net-zero operating emissions**².

Using **renewable-energy-capture** technologies the HyperloopTT system is designed to produce more energy than it consumes thus capable of putting energy back into the grid.

The HyperloopTT system greatly avoids noise pollution by **operating under 50 Db**.

HYPERLOOPTT



¹ HyperloopTT system carbon footprint model based on Great Lakes Hyperloop Feasibility Study & other global high-speed systems
² based on operation scope 1 and scope 2 emissions + <https://ghgprotocol.org/>

Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)

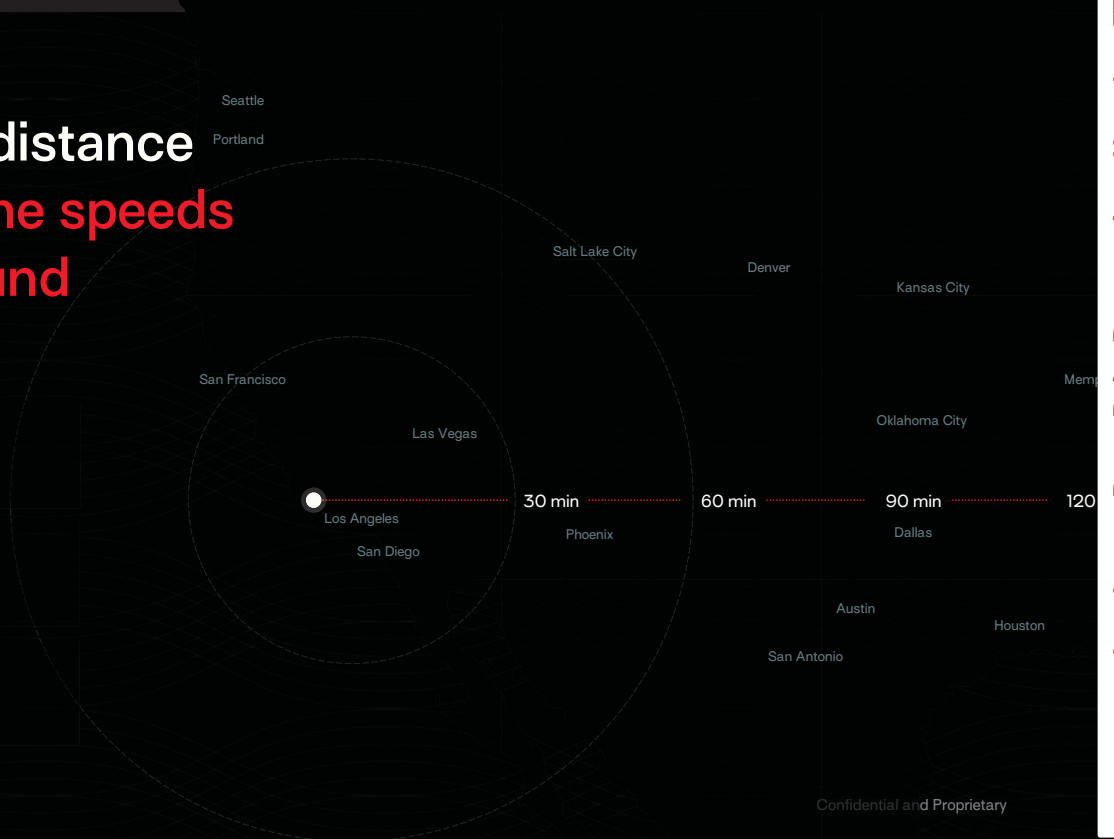


Redefines distance with airplane speeds on the ground

Remove distance barriers

Redefine urban landscapes

Create economic opportunities



HYPERLOOPTT

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A transport revolution **not seen in over 100 years**



SYSTEM COST*

- ✓ **Lower** construction cost
- ✓ **Lower** operational cost
- ✓ **Lower** maintenance cost



SYSTEM INCOME

- ✓ **Dynamic** ticket pricing
- ✓ **On-demand** mobility
- ✓ **High** throughput



ECONOMICS**

- ✓ **Positive** benefit-cost ratio
- ✓ **Competitive** ROI
- ✓ **Zero** operating subsidies

* Compared to highway expansion and high-speed rail
 ** Based on the Great Lakes Hyperloop Feasibility Study

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PREPARING FOR GLOBAL DEPLOYMENT

Commercialization underway

HYPERLOOPTT





Most recent development partners



Ferrovial

Infrastructure developer & operator

- \$7 B in revenue | \$20 B capitalization
- Operator of London Heathrow Airport
- HyperloopTT framework agreement to analyze US projects



Hitachi Rail

Railway signaling & systems integrator

- \$5 B in revenue
- 20 global HSR projects
- HyperloopTT investor & communications systems strategic partner



Altran

Engineering and R&D services provider

- Over 46,000 engineers
- \$3.8 B in revenue
- HyperloopTT partnership providing 100 system development engineers



Icomera

Continuous gigabit-speed provider

- Dedicated antennas capable of streaming over 200 4K/8K UHD AR films or 10,000 songs.
- HyperloopTT digital partner, equipment supplier and systems integrator for wireless capsule-to-ground communications



HyperloopTT development projects



R&D Center

TOULOUSE, FRANCE

- Testing & certification
- Ongoing integration and optimization
- Co-developed certification guidelines



Commercial Prototype

ABU DHABI, UAE

- Located close to Expo and airport
- Concept design completed
- 3-5 km passenger hyperloop



Cargo Prototype

PORT OF HAMBURG, GERMANY

- Joint Venture with HHLA
- Integrating with port automation
- Sustainable plug-and-play solution



USA Feasibility Study **scope and process**



Great Lakes Hyperloop CLEVELAND - CHICAGO - PITTSBURGH

- Define project objectives & organization
- Site reconnaissance & preliminary route analysis
Including ridership forecast, station locations, land access
- Technical & financial feasibility study
Including construction & operating costs + 30% contingency
- Project development cost & schedule
Including USDOT Benefit-cost methodology

Feb. 2018	Public-private Partnership
Dec. 2019	Public Draft release
160+	Pages
3+	Months of public comment and peer review
Oct. 2020	Final release

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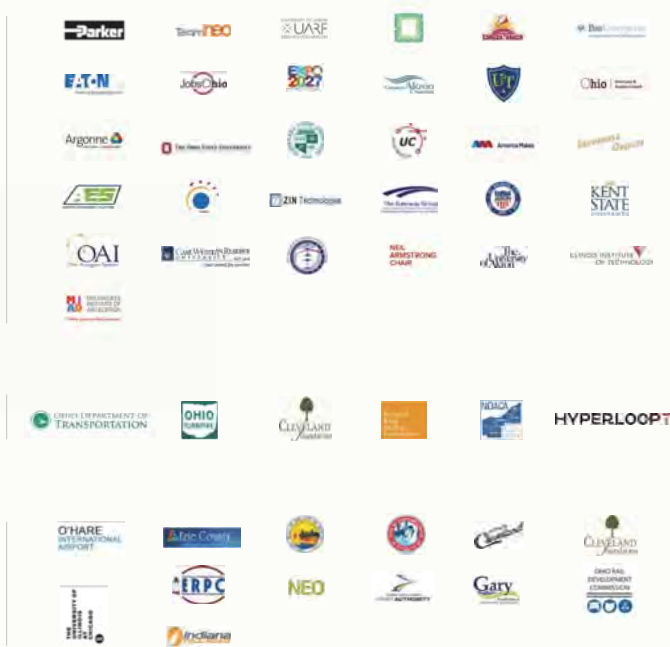
Great Lakes Hyperloop Consortium

30+ Regional partners

10+ Regional stakeholders

Utilizing local expertise and resources to bring hyperloop to the Great Lakes Megaregion

HYPERLOOPTT



Funding partners

Regional stakeholders

Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)



Great Lakes Hyperloop regional effort

45+ Technical advisory committee members

Bringing Federal entities, public agencies and regional stakeholders together to inform each phase

HYPERLOOPTT

The NETT Council



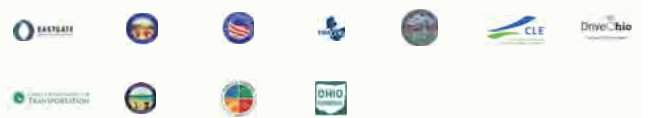
Pittsburgh Technical Advisor Committee



Chicago Technical Advisory Committee



Cleveland Technical Advisory Committee



Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)



Great Lakes Hyperloop 2025-2050 regional economic impact

\$ 25.4 B Approximate capital costs with 30% contingency

\$ 0 Operating subsidies

\$ 30 B Operating profit over project life

2.20 Remarkable Benefit/Cost Ratio

11.8 % Nominal Economic Return

“ If the project is developed as a national network, like the Interstate System, hyperloop could contribute as much as **0.5 to 1.0 percent growth in Gross Domestic Product (GDP) over 20 years.** ”
- Great Lakes Hyperloop Feasibility Study Report



\$74.8 B
Property value increase

Property value increase almost **3X** project capital costs



\$12.7 B
Expanded tax base

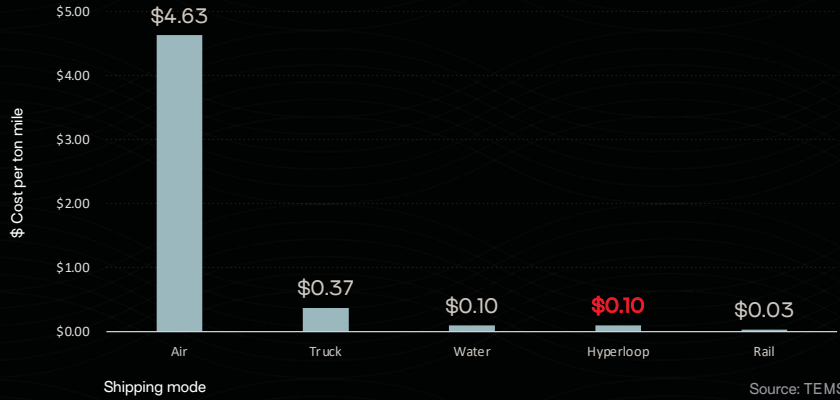
Expanded tax base **50 - 55%** of project capital costs

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Chicago–Cleveland–Pittsburgh corridor Hyperloop freight | Estimated cost comparison



Air cargo and less-than-truckload express trucking demand along the corridor is growing at 4 to 5% per year. With lower costs and significantly shorter travel times, hyperloop can **not only transform the freight industry but absorb all estimated growth.**

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YEARS NOT DECADES

Hyperloop is happening now

HYPERLOOPTT





Commercial readiness



Certification

Produced first complete set of generic guidelines for design, operation, and certification



Insurance

First insurance framework for HyperloopTT commercial systems as Munich Re deems technology feasible and insurable

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USDOT advancements

FORMER SECRETARY ELAINE CHAO



New technologies increasingly straddle more than one mode of transportation, so I've signed an order creating a new internal department council to better coordinate the review of innovation that have multi-modal applications.



MARCH 2019

Formation of the Non-traditional and Emerging Transportation Technologies (NETT) Council

HYPERLOOPTT



This guidance bridges the gap between innovator and regulator, prioritizes safety during development without hampering innovation, and promotes mutual awareness between industry and government.



JULY 2020

Publication of guidance document putting hyperloop projects under the Federal Railroad Administration

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Regulatory progress

JUNE 2019

U.S. DOT sends officials from the U.S. Offices of Transportation, Trade, and Aviation & International Affairs to the HyperloopTT Research & Development Center in Toulouse, France.

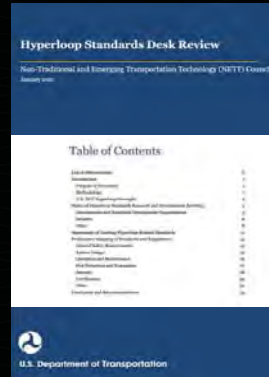
Officials receive a technical presentation of the fully functional, full-scale, 320m passenger system.



HYPERLOOPTT

JANUARY 2021

U.S. DOT announces the **Hyperloop Standards Desk Review** sponsored by the Department's Non-Traditional and Emerging Transportation Technology (NETT) Council.



- ➔ Assess status of hyperloop standards activities
- ➔ Begin dialogue for future standardization efforts
- ➔ Identify stakeholder perspectives on applicability of existing standards to domestic testing and deployment

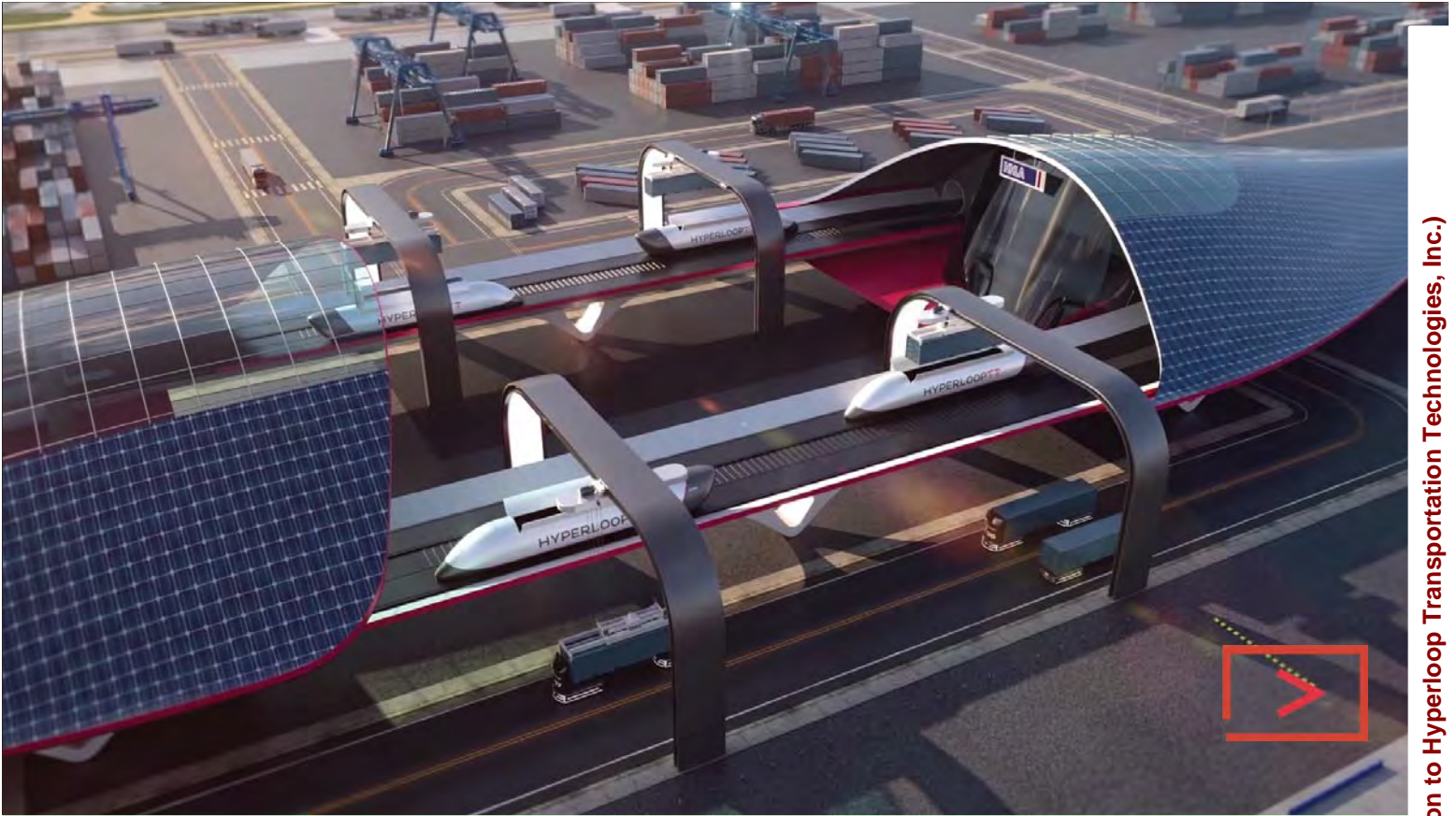
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LA + Long Beach HyperPort Discussion

HYPERLOOPTT







Stakeholder **benefits**



PUBLIC AUTHORITIES

Increased regional cargo processing capacity and decreased utilization of waterfront spaces



INFRASTRUCTURE PROVIDERS

Profitable next-generation transportation system positioned for long-term adoption



TRANSPORTATION COMPANIES

Increased infrastructure reliability maximizing profits by eliminating delays



CAPSULE PROVIDERS

Recurring production and maintenance revenue



LOGISTICS COMPANIES

Increased operational efficiency minimizing shipping times and transportation, demurrage, and warehousing costs



TERMINAL OPERATORS

Leveraging automation increases terminal throughput and decreases reliance on workers



MERCHANTS

Accurate shipping and delivery times with decreases warehousing costs



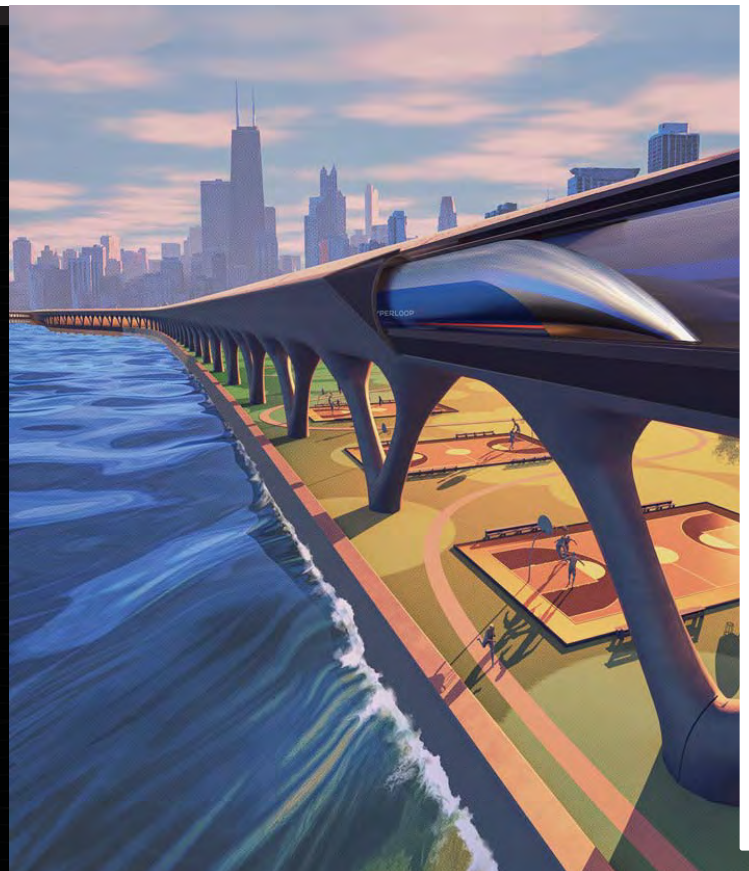
GENERAL PUBLIC

Increased access to waterfront land and cheaper cost of shipping when purchasing products



LA + Long Beach HyperPort **next steps**

- Continue collaboration with USDOT and NETT Council certification and regulation development
- Clarify objectives with SCAG and LA Ports
- Identify and assemble stakeholders
- Evaluate Feasibility Scoping Study needs
- Evaluate framework for Public-private partnership





The future is now boarding

HYPERLOOPTT



Attachment: PowerPoint Presentation - HyperloopTT (Introduction to Hyperloop Transportation Technologies, Inc.)



Additional assets



Imagine video

<https://youtu.be/7q4KeEP2JHM>



Full-scale hyperloop video

<https://youtu.be/DtICfZG-0lc>



Once in a lifetime video

https://youtu.be/OxJOIMzq_g



HyperPort sustainable cargo video

<https://youtu.be/ijWloF2QluM>



Great Lakes Feasibility Study video

<https://youtu.be/DHXI-isBRKQ>



Great Lakes Feasibility Study report

greatlakeshyperloop.com/results

HYPERLOOPTT

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HYPERLOOPTT

www.hyperlooptt.com



AGENDA ITEM 5
REPORT

Southern California Association of Governments
Remote Participation Only
August 26, 2021

To: Emerging Technologies Committee (ETC)

EXECUTIVE DIRECTOR'S
APPROVAL

From: Thomas Bellino, Senior Regional Planner
(213) 236-1830, bellino@scag.ca.gov

Subject: Open Discussion of Future Emerging Technologies Committee Topics

RECOMMENDED ACTION:

Information Only – No Action Required

STRATEGIC PLAN:

This item supports the following Strategic Plan Goal 1: Produce innovative solutions that improve the quality of life for Southern Californians. 3: Be the foremost data information hub for the region. 4: Provide innovative information and value-added services to enhance member agencies' planning and operations and promote regional collaboration.

EXECUTIVE SUMMARY:

Over the last year and a half, the Emerging Technologies Committee (ETC) has met approximately every other month to discuss the myriad ways the representatives of our member agencies can benefit from innovative solutions to the problems their communities face. As the ETC approaches its third year, staff will facilitate a dedicated and focused discussion of potential new topics for the Committee to consider in the coming months.

BACKGROUND:

The Emerging Technologies Committee (ETC) was convened in January of 2019 to research and identify new and emerging technologies that play an important role in regional planning and is intended to serve as a resource for the Regional Council and Policy Committees. As the ETC discussed at its kickoff meeting, the Committee objectives include:

- Identify technological and societal trends that may fundamentally alter and improve the use of the region's transportation system.
- Frame potential policy considerations to enable the region to harness the benefits of emerging technologies that reduce sprawl, vehicle miles traveled (VMT), and greenhouse gas (GHG) emissions.
- Highlight opportunities for under-represented, disadvantaged communities to utilize emerging technologies.

- Explore technologies which, while in a nascent or testing stage, remain relevant to the future of the region's transportation system.

At the request of the ETC Chair, staff seeks to facilitate a discussion among Committee members to better understand which topics they would like to pursue in the coming months. The Committee has learned about, discussed, and visited a wide range of projects and places both within and outside the region. It is envisioned that a dedicated and longer discussion among Committee members and staff can help flesh out ideas to guide future agenda development.

A few questions that could guide this discussion are:

- What focus areas would Committee members like to pursue? Transportation, housing, sustainability, equity, the future of the economy, workforce development, etc.
- What specific projects or places would you like to learn more about?
 - Within the SCAG region
 - Outside the region
- Which kinds of experts would you like to hear from? Planners, economists, professors, etc.
- Would you like to resume in-person field trips? If so, when?
- How has the COVID-19 pandemic changed the way you think about issues surrounding Emerging Technology?
- How have the shifts created by the pandemic affected your communities?
 - Has it changed the way people in your communities commute, shop, socialize, etc.?
What impacts have those shifts had on your communities?

FISCAL IMPACT:

None.