

CHAIR ON TRANSFORMATION OF TRANSPORTATION
Workshop: Assessing emissions of transportation
February 14, 2020 in Montreal (QC)

Séquençage des politiques de climat et des transports en Californie et au Québec / Climate and Transport Policy Sequencing in California and Quebec



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Overview of the JCCTRP

JCCTRP

Joint Clean Climate Transport Research Partnership
Partenariat de recherche conjoint sur le climat et les transports



Website: www.jcctrp.org

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- **Goal**

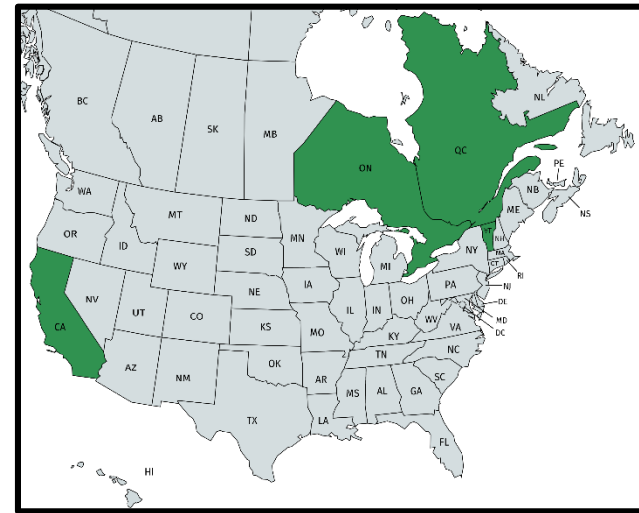
- To identify technical, economic and political factors shaping the potential for environmentally effective, economically efficient, and politically viable low-carbon transport and climate mitigation policy. The JCCTRP is addressing this goal by bringing together modeling and policy researchers in various jurisdictions into engagement with decision-makers.

- **Partner organizations**

- Leading universities, private research institutions, businesses and non-profit organizations
- **Quebec, California, Ontario and Vermont**
- Includes jurisdictions of the WCI, RGGI and TCI

- **Funding**

- Recipient of a prestigious Partnership Development Grant from the Canadian Social Sciences and Humanities Research Council (SSHRC)



Quebec



California



Vermont



Ontario



Phases of JCCTRP Research

- **Phase 1**

- July 2018 – February 2019
- **Objective:** Characterize Existing Approaches to the Economic and Political Analysis of Low-Carbon Transport and Climate Change Mitigation Policy

- **Phase 2**

- March 2019 – March 2020
- **Objective:** Jointly Develop of Modeling Scenarios for Low-Carbon Transport and Climate Change Mitigation Policy and Undertake Preliminary Analysis

- **Phase 3**

- March 2020 – June 2020
- **Objective:** Road-map identifying technical, economic and political factors for effective, politically viable transport and climate policy and understanding their implications for emissions trading

Phase 2 Working Groups

1) Carbon Pricing and Policy Sequencing

- Modeling Policy Sequencing using TIMES: carbon pricing, ZEV Mandates, LCFS, Vehicle Emission Standards
- Economic Advantages of Linking State/Provincial Carbon Markets

2) Urban Transit

- California *Sustainable Communities and Climate Protection Act*
- Model Regional Plan Climate Targets for California in Toronto using TRANUS transport and land-use change model

3) Transport-Energy Nexus

- Modeling the impact of electric vehicle penetration on energy demand in Quebec using UVermont transport-energy model

4) Low-Carbon Fuel Standard

- LCFS comparison matrix for California, Canada, BC, including modeling differences

5) Comparative Policy

- Investigating role of modeling urban transport through comparison of Los Angeles, Sacramento, Toronto and Montreal

2020 Quebec Symposium on Global Climate and Transport Policy

- **Goal:** *Building on the Joint Clean Climate Transport Research Partnership (JCCTRP), the Symposium aims to bring together researchers and key stakeholders from Canada, the US, Europe and China to discuss global climate and transport policy in Montreal*
- **Date:** *10-12 June 2020*
- **Location:** *Université du Québec à Montréal (UQAM_ campus in downtown Montréal*
- **Organization:**
 - JCCTRP workshop on Day 1 which will be capped-off with a public seminar and presentation of Road Map
 - Open conference on Day 2 showcasing the work of the JCCTRP, ZEV Policy Lab and TCI
 - Day 3 will allow participants from all three research bodies to identify collaborative research needs and opportunities.

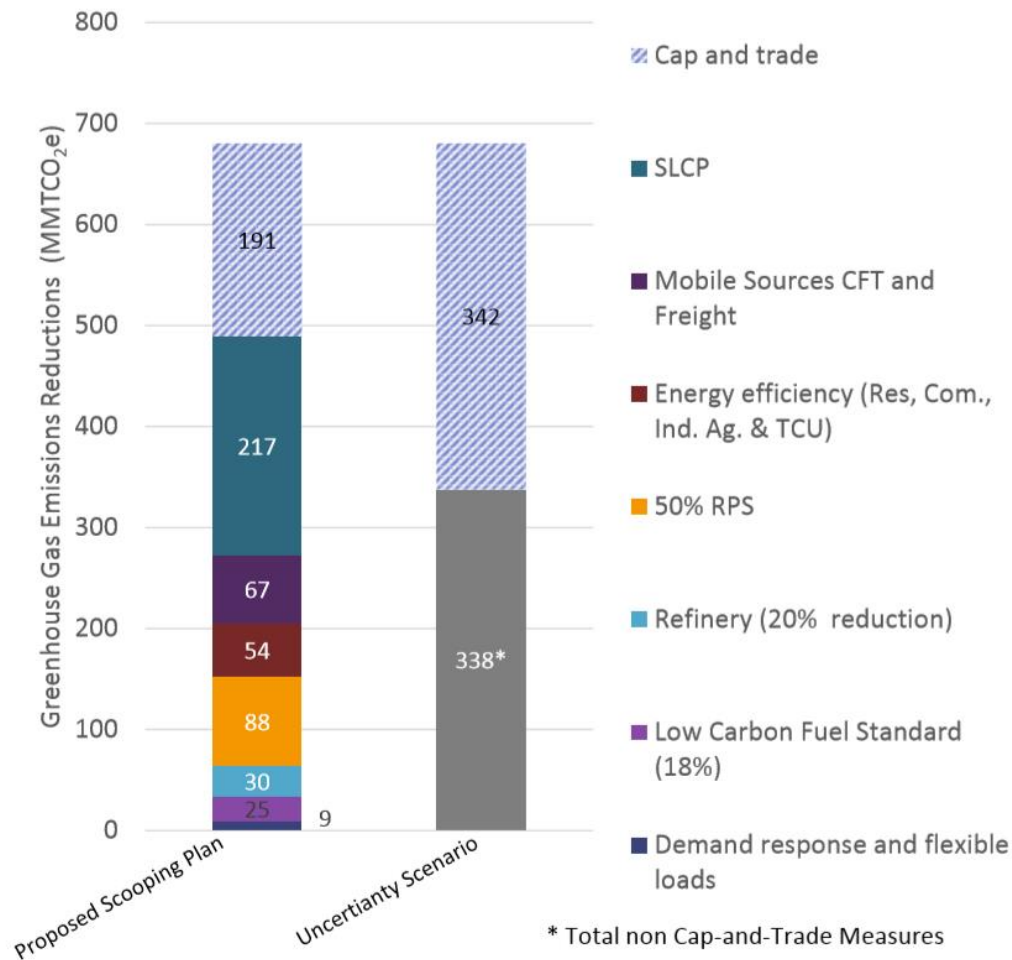
Climate and Transport Policy Sequencing

Questions about the Diffusion and Effectiveness of California's Climate Policy

- **Climate policy in California is complex involving carbon pricing and “complementary policies” in various sectors of the economy**
 - Complementary policies currently play a dominant role
- **Questions remain about what factors affect the diffusion and eventual effectiveness of such a complex suite of climate policies**
 - Difficult to replicate?
 - Do complementary policies hamper the price signal elicited through cap-and-trade?

California Climate Plan

“Scoping Plan Update” (2017)



Emission reductions in California via carbon market prices and complementary policies

Source of Abatement Supply	Average Modeled Reductions over 2013-2020	
	MtCO ₂ e	MtCO ₂ e
Emission Reductions Response to Allowance Prices	Floor	Ceiling
Electricity	3.4	9.7
Transport	3.6	12.2
Natural Gas	11.0	31.2
Emission Reductions Resulting from Complementary Policies		
Vehicle Emission Standards & LCFS	78.3	78.3
Renewable Portfolio Standard	63.1	63.1
Emission Reductions Resulting from Other Non-Price Factors		
Exogenous Electricity Rate Effects	9.6	9.6
Electricity Imports	64.0	64.0
Offsets	97.7	97.7
Total	330.8	365.9

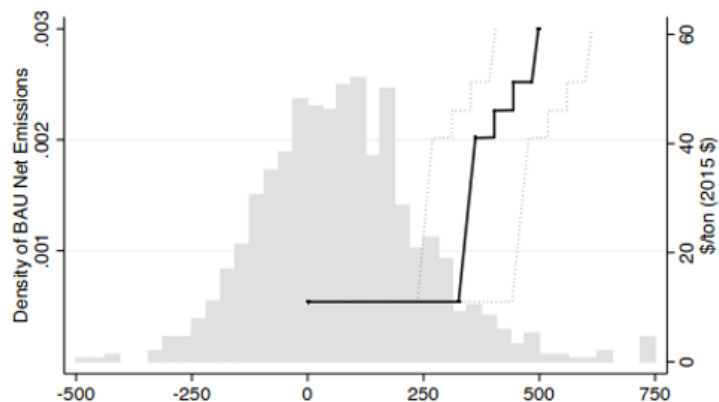
Source: (Borenstein et al., 2018: 18-19)

Politics of Climate and Transport Policy Sequencing

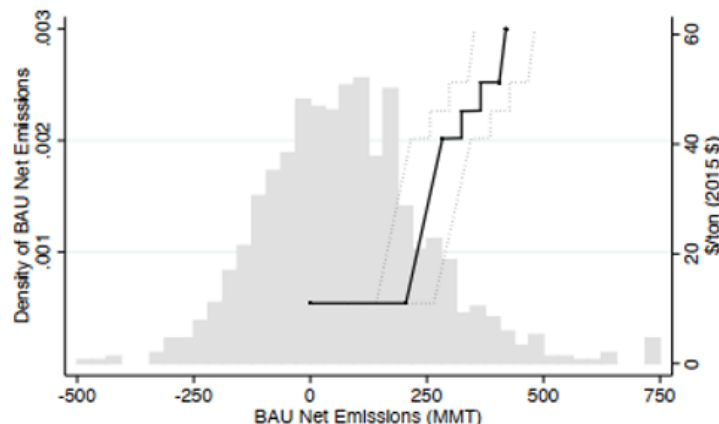
- **Policy sequencing**
 - Relationship between carbon pricing and complementary policies evolves over time, with complementary policies generally coming first and generating important political benefits that allow carbon pricing to be more broadly introduced later
 - Properly accounting for policy interactions, efficiency and flexibility is difficult
 - Also requires significant technical resources for governments to design policy components targeting specific sectors of the economy

Carbon prices in California's cap-and-trade system with and without complementary policies

With
Complementary
Policies



Without
Complementary
Policies



BAU Net Emissions Median Abatement
2.5% Abatement 97.5% Abatement

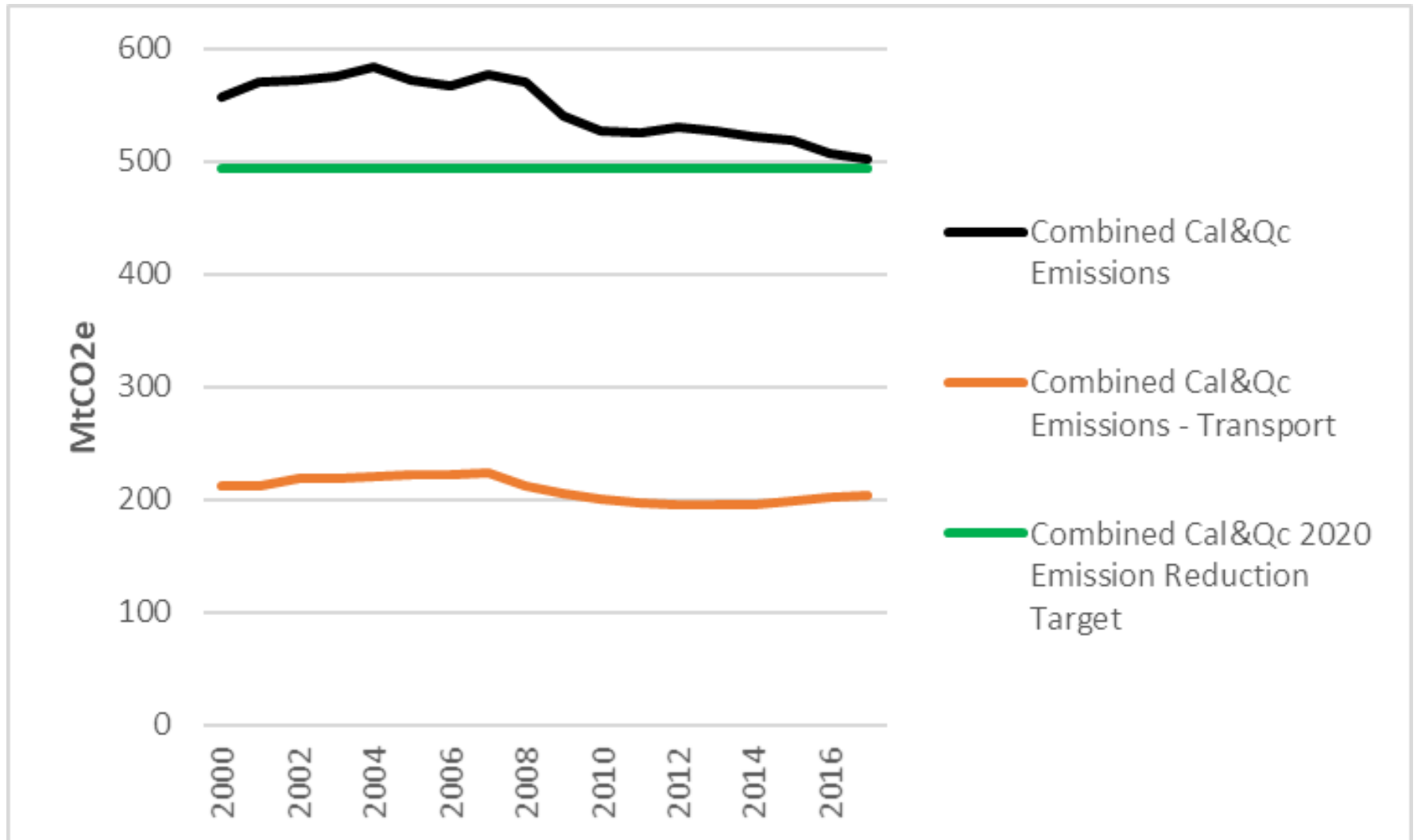
BAU net emissions are (2013-2020) BAU emissions less allowances not in reserves

Quebec Climate and Transport :

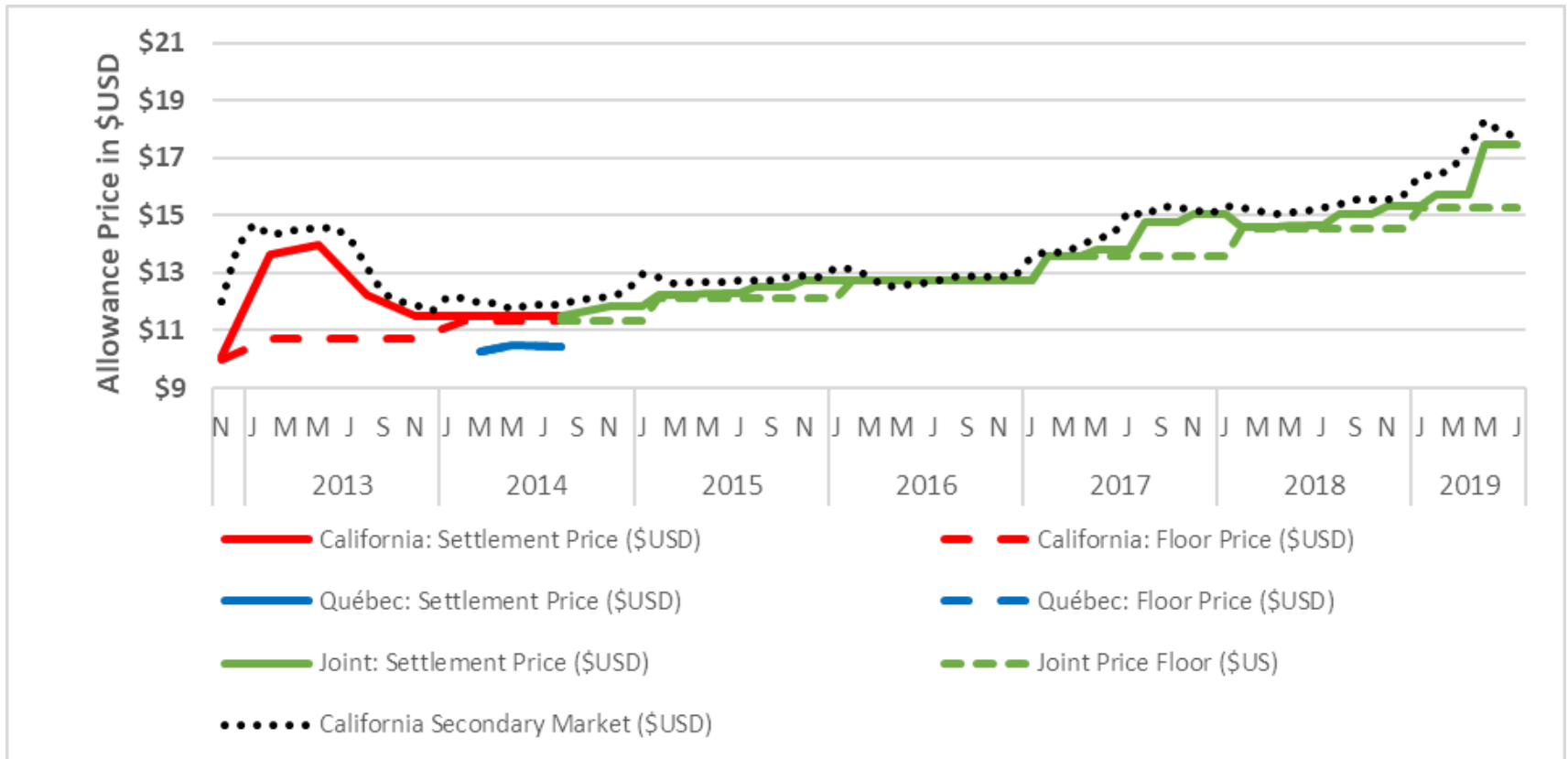
Evidence of Policy Replication and Sequencing

- **Objective: provide historical and policy detail on the evolution of emissions trading and low-carbon transportation policy in California and Quebec**
 - Quebec remains California's sole partner in emissions trading
- **Many of the policy approaches observed in California's transport sector have been or are being adopted and adapted by the Quebec government and Canadian federal governments**
 - Vehicle emissions standards, some type of low carbon fuel standards (LCFS) and zero emissions vehicle (ZEV) mandates.
- **But there are important differences**
 - California's regional climate targets
 - "Regional Plan Climate Targets" expressed as a percent change in per capita passenger vehicle GHG emissions relative to 2005
 - Require regional governing bodies to demonstrate compliance strategies through complex transport system modeling efforts.

Total Combined Emissions in California and Quebec, 2000-2017



Evolution in allowance price floor as well as primary and secondary market allowance prices, 2012-2019



Timeline of Emissions Trading and Low-Carbon Transport Policy in California, Quebec and Canada

YEAR	CALIFORNIA		QUEBEC		CANADIAN FEDERAL GOVT	
	Emission Trading	Transport Policy	Emissions Trading	Transport Policy	Carbon Pricing	Transport Policy
1990		LEV I & ZEV 1				
1998		LEV II				
2002		AB1493 (Pavley 1)				
2004		ZEV 2				
2006				Link to Pavley 1		
2007		Waiver Denial & LCFS 1				MVFCSA Proclaimed
2010						GHG Emission Regulations
2012	Cap-and-Trade	ACC				
2013		LCFS Legal Challenge	Cap-and-Trade			
2014		LCFS Legal Challenge	Linking Cap-and-Trade			Link to EPA Standards
2015		LCFS 2				
2016		ZEV 4 & Sustain. Freight AP		Replicate California ZEV	Backstop Carbon Pricing	
2017						ZEV Announcement
2018						Clean Fuel Stand. Announcement
2019					Backstop CP Implemented	Link to Cal. Standards

Implications and Future Research Questions

- **What enables the replication of complex suites of climate policies?**
 - Have the comparatively broad similarities in political conditions in California and Quebec created conditions for policy learning that was able to emerge to fill policy technical capacity gaps?
- **Is carbon pricing alone unable to drive emission reductions in the transportation sector**
 - Since both California and Quebec have pursued additional low-carbon transportation policies after linking emissions trading systems, does this mean that it remains politically difficult to raise carbon market prices to levels necessary to drive significant reductions in the transportation sector?
- **Does emissions trading require symmetry in terms of complementary policies between jurisdictions in order to address free-rider concerns?**
 - Does the linkage of emissions trading systems encourage the replication of complementary policies in the transportation sector in order to reduce differences between the price of carbon on the market and the actual cost of reducing emissions introduced by complementary policies themselves?

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Merci!
Thank you!

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