RC&S US Focus Analysis

December 2020

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Executive Summary

- Part 1: US Context
  - To support global target $1b/year, at current project scale, RC&S in US will need to progress 70-80 options and deliver 12-16 projects.
  - Each US state represents a material value proposition, e.g., California broadly same GDP as Germany; need to develop state-wise view.
  - Biden Admin expected to positively impact opportunity set .
  - Feedback of think-thanks is to focus on emissions clusters, progress low-hanging fruit, while working on big ticket items like CCU and H2, influence for fiscal support around “Low Carbon Emission Zones” .

- Part 2: Where in US to play
  - Regional lens:
    - 50% of emissions opportunity sits within 10 states
    - We have selected 4 zones for 2021/22 focus
    - Develop Houston as a pilot site for RC&S solutions
  - Customer lens: Within the four focus zones and in alignment with RC&S strategy we have identified 2-3 companies within each zone.
  - A preliminary heat map of capability vs. requirement of candidates suggest that bp needs to upskill toolkit across US. A detailed study of this is needed.

- Part 3: How-to-play”: Learnings from City of Houston collaboration
  - Integrated solutions with City of Houston likely will be smaller scale; Houston presents opportunity to pilot integrated solutions.
  - Opportunities at scale in the US are more likely identified within metropolitan areas (not city limits), where there is a significant overlap of government and corporate activity, as well as opportunity for government policy incentives.
  - Value upside will require integrated solutions around anchor customers, much like upstream development is anchored around a major field, with overlapping region and corporate options.
  - Anecdotally, pragmatic US approach may favor corporates over cities, with a focus on medium-sized cities first to build track record.
  - Solutions need to be integrated, scalable and replicable.

- Part 4: What’s next
  - There are currently various strategy projects underway across businesses in the US. These need to be integrated (through an internal collaborative effort) into one view of US opportunities and risks. Recommended 1Q effort led by RC&S; followed by 2Q state analysis by S&S.

Part 1: US Context

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Supporting RC&S cash delivery in the US will require a hopper of 70-80 opportunities to deliver 16-20 by 2030

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RC&S will need to progress a sizable hopper of opportunities

Global RC&S Cash delivery by 2030

$1bn/yr

US RC&S cash delivery by 2030
(40% of global; in line with rest of business)

$0.4bn/yr

Average cash delivery est. per city/corporate

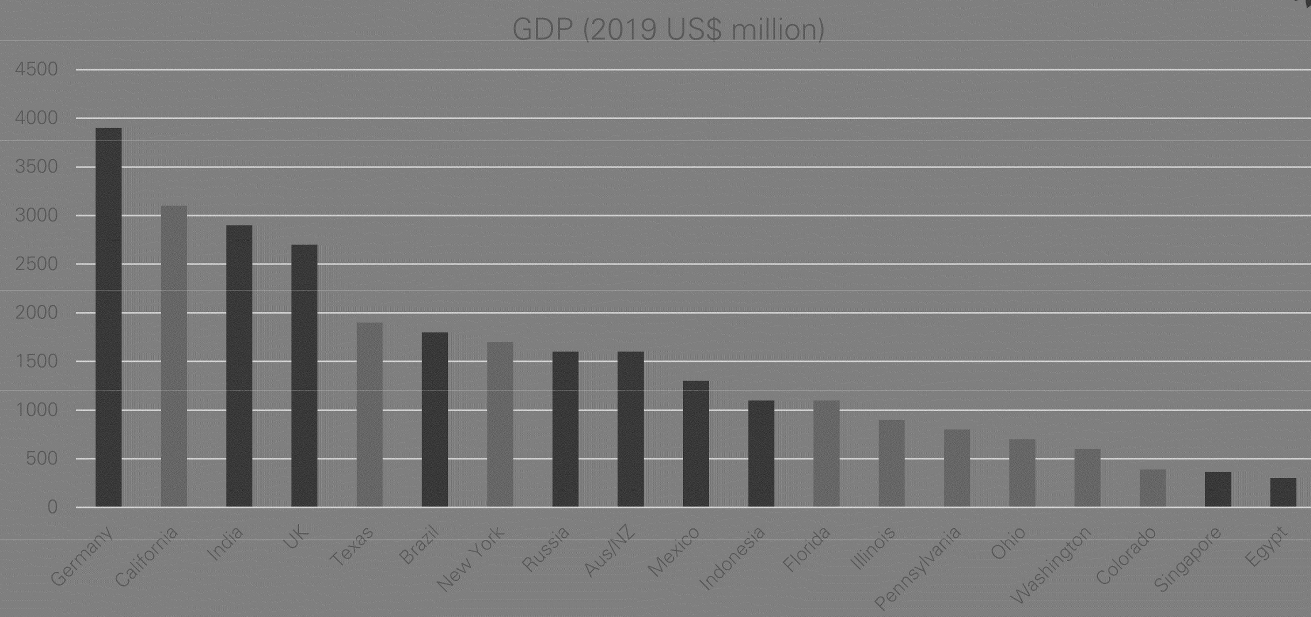
$25m/yr

Projects required to deliver US cash target

16

- For US Region to deliver of 40% of global RC&S cash target by 2030, 12-16 projects will need to reach FID with an average cash delivery of c.$30m/yr
- Delivery of 12-16 projects by 2030 will require:
  - Material scale for each option
  - Ability to leverage, or replicate, 80% of the "integrated option structure" from one project to the next
- A hopper of options 6-8 times larger, i.e., 70-80 projects being incubated, in order to deliver quality at scale by 2030

The USA: 50 separate GDPs and opportunities, with many state as sizeable as priority countries



*Excludes China ($14200) for scale

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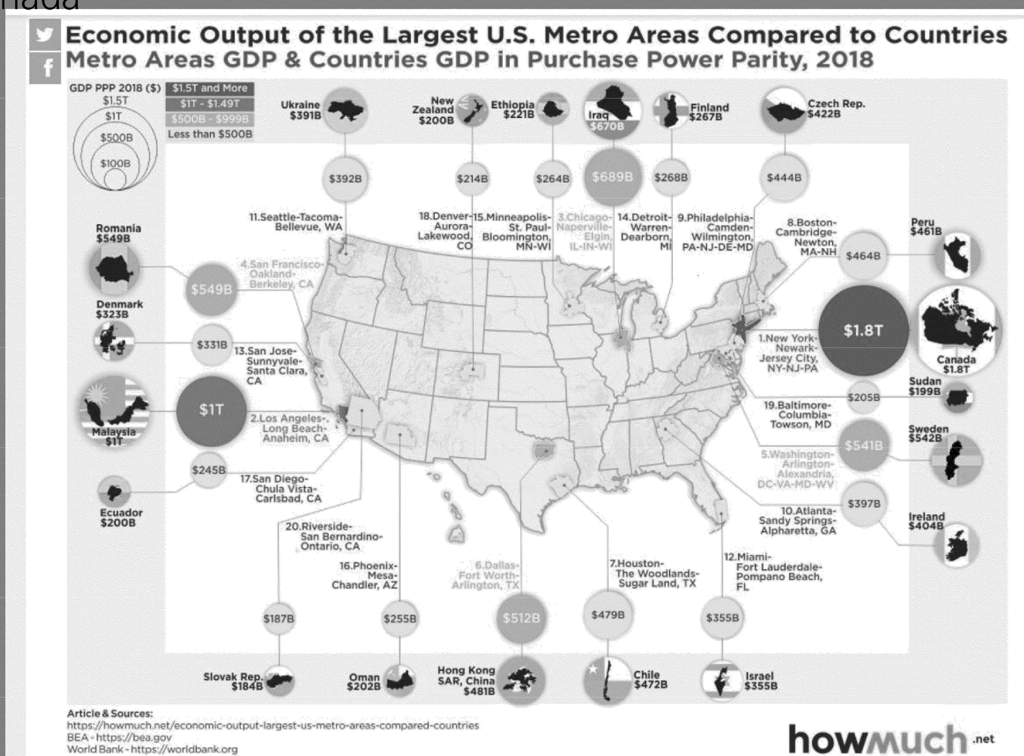
GDP of a few US metro areas is comparable to countries e.g. LA to Malaysia, NYC to Canada



Opportunity at scale in the US is focused in 10 of the 50 states

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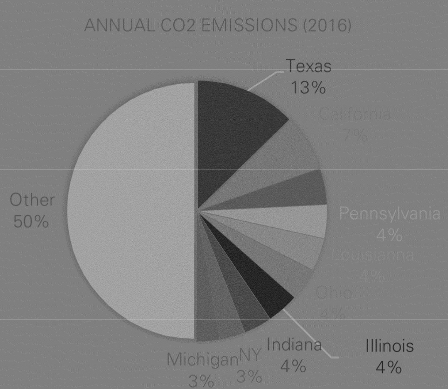

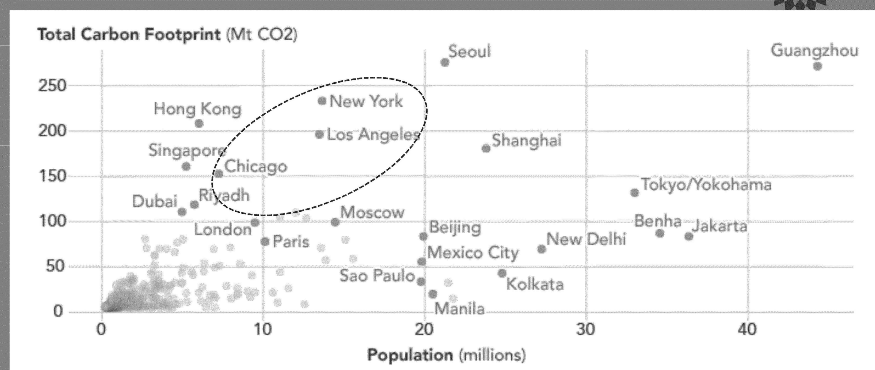

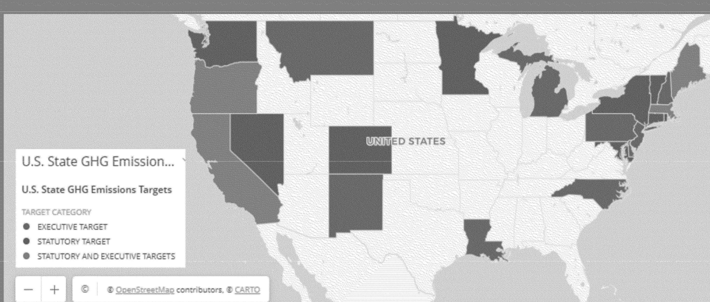

- Ten states account for half of all US emissions
- NY, LA and Chicago represent a global-scale footprint
- Western and Northeastern states have the most binding, i.e., statutory, commitment to reducing emissions.
- Only 2 of 10 top emitting states (NY and CA) have statutory commitments to reducing emissions.

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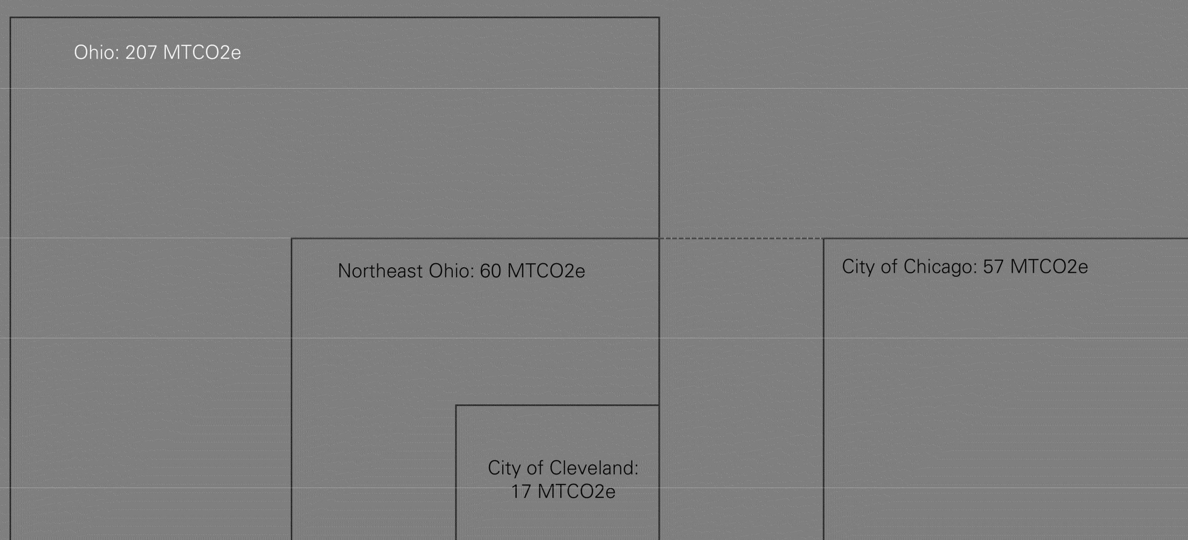
It is important to see scope of the opportunity above the city level, e.g. extended metro area



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Changes to Federal Energy and Environment Policy

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The Biden administration will focus on strengthening environmental policies and elevating clean energy sources

Regulating GHG emissions from the oil & gas, automotive, and power sectors

Requiring that climate policy and GHG emissions considerations inform all relevant federal agency decisions in areas such as:

- Approving multi-state infrastructure projects;
- Siting renewable energy on federal lands and waters;
- Approving leases for oil and gas on federal lands and waters;
- The awarding of federal grants or loan guarantees; and
- Federal procurement practices.

Independent U.S. financial regulators will also focus on addressing financial climate-related risk.

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Feedback to US RC&S from US think-tanks is to focus on "Opportunity Zones", low-hanging fruit while working on CCU/H2

Center for Strategic and International Studies (CSIS)

- Cities across the globe are struggling to translate net zero vision into action; focus on capturing low hanging fruit.
- US will require "Low Carbon Opportunity Zones" (LCOZ) as scalable focus areas.
    - "Opportunity Zones" already exist within the US as "economically-distressed communities where new investments, under certain conditions, may be eligible for preferential tax treatment."
    - LCOZ represent overlaps of government and corporate with material emissions reduction potential and would provide defined opportunities for federal and state policy coordination.
- Opportunities of material scale, e.g., CCUS, would be easier to implement and make economic within an LCOZ.

Columbia University Energy Center

- Building a brand as an IEC rather than an IOC holds inherent value and will reposition bp in its discussions with potential corporate partners to be viewed as more than a supplier.
- The way bp is changing how it influences through third parties is one of the most notable sources of evidence that demonstrate commitment to evolving.
- Influencing policy will need to occur at a state and federal level given that most levers sit within state, not federal, control.
- The large-scale plays impact emissions, e.g., CCUS and hydrogen, will require big players with financing capability, and represent the most transformational opportunity in the net zero effort.

Part 2: Where is US to play

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Individual bp business/enabling strategies in the US

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	C&P	GPTA	RPT	G&LCE
US Strategy in place?	Integrated growth in existing markets; targeted geographic and technology inorganics	Trading, asset optimization	Trading, asset optimization, growth in low carbon origination and trading	• Overarching business strategies in place (not regional) • Regional strategies TBD but key country focus areas are clear
Priorities	• Maximize integrated value • Increase customer touch points, including convenience • Expand offerings to include EV, renewables, hydrogen, and lower-carbon solutions	• Green offering • Unique customer solutions • Expansion further down the value chain • Technology as a growth driver	• Deliver integrated value and optimization for bp and third parties • Grow in biogas, renewable fuels, natural climate solutions, and other emerging low carbon sectors	• IGP: Brazil, India China initial focus • Bio: MSW to biojet through Fulcrum's 1st plant. • Renewables: grow onshore wind and LSBP solar. Establish offshore wind. Integration with T&S, C&I REP • Hydrogen: Heavy duty transport. Industrial hubs for CCUS – Houston, Mid-West and North (linked to Cherry Pt & Whiting
Solutions	• Targeted customer and consumer offering leveraging digital, from branded convenience sites to EV stations to large B2B customers • Renewable products or blended hydrocarbon and low carbon solutions • Strategic partnerships leveraging bp expertise	• Carbon Offset Natural Gas, "CONG" and Carbon offset propane, "COP" • Renewable energy credits, "(RECs)" • Hedging solutions to consumers and producers in new commodities • Serving end-use Commercial and Industrial (C&I) customers in power and gas • Assess opportunities CO2 storage	• Renewable products • Bundled products and credits • Capital light investments in growth areas, including waste to energy, renewables, infrastructure	• Establish with T&S, a C&I customer facing business with EAAS capabilities • CCUS capabilities • MSW to Biojet

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US Competitors in lower carbon energy: bp gap in end use solutions

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There is limited competition with full breath of capability; bp has a gap in end -use capability

		Generation & Production			Wholesale		End Use			
		Wind	Solar	Gas	Power	Gas	Power	Gas	Services	Others
Asset Focused	enel Green Power	●	◐	○	◔	◔	○	○	●	edp renewables
Balanced	NextEra ENERGY	●	●	◔	●	◔	●	◔	◐	ENGIE, EDF
Retail Focused	Exelon Constellation	◐	◐	○	●	◐	●	◐	●	nrg
Wholesaler/ Retailer	just energy	○	○	○	◔	◔	●	◐	◔	IGS
Service Focused	AMERESCO Green • Clean • Sustainable	○	○	○	○	○	○	○	●	Schneider Electric
New Entrant	Shell	◔	◐	◐	●	●	◐	●	◔	*Other O&G/ Tech*
	bp	◐	●	●	●	●	○	◐	○	

Market position: ● Top tier ◐ Mid tier ◔ Small / Nascent ○ None

Bp's strong upstream and wholesale presence combined end use capabilities will enable complete presence across value chain.

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Prioritizing partner candidates very early on is critical to the allocation of limited resources

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Draft criteria elements for partner prioritization

- Metro area or corporate center located in one of the four priority zones.
- Alignment between partner problem(s) focus and bp solutions in the zone.
- Opportunity for bp to be a strategic partner, not just a supplier.
- Can a prior bp integrated solution be leveraged?
- Estimated pre-tax cash flow opportunity, with strong bias for greater than $25m/yr.
- Would new relationship leverage an existing bp partnership?

Pending integration with effort by Insights team

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Part 3: How to play:

City of Houston Integrated Solution

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Houston Integrated Offer (working model)

Implemented over time

Natural Climate Solutions
- Carbon offsets

Renewables
- Solar at scale, starting with Sunnyside

Waste to Energy
- Plastics to diesel (Brightmark option)
- Renewable natural gas

Opportunity Incubation
- Hydrogen

Decarbonization of mobility
- Electrification
- Biofules

Decarbonized Infrastructure
- Airports
- Port of Houston
- CCUS

Building/Energy management
- Leverage expertise of existing partners/ventures
- Pilot opportunity for bp to learn how to scale up

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Illustration of an integrated offer – Houston draft

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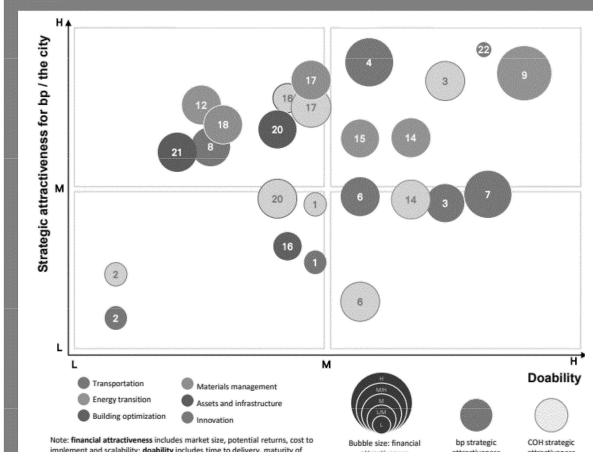

KPMG draft analysis of Houston integrated offer of solutions

Clear winners

'No-brainers' and/or potential quick wins to demonstrate success and drive momentum

- 3 Support EV charging infrastructure roll-out and strategy at municipal property and on-street
- 4 Develop rapid EV charging hubs for B2B fleets
- 7 Provision of a basket of low emission fuels to the city's public transport network / METRO fleets
- 9 Develop grid-scale solar farm projects for key residential areas e.g. Sunnyside
- 14 Assist the City on Carbon offset programs e.g. facilitate carbon credit scheme between city and corporates
- 15 Provide renewable energy supply to large corporate companies through private wire arrangements

Good fit

Will take longer to commercialise but align with bp capabilities and future vision

- 16 Improve and optimise energy efficiency in Houston's private and public property through e.g. changing and upgrading heating systems, smart energy use/AI
- 17 Explore waste to energy opportunities
- 22 Work with other portfolio companies to help address other parts of CAP

Big bets

Currently high risk but with high potential returns subject to level of integration

- 12 Develop CCUS solutions to decarbonise industrial activities e.g. Houston Ship Channel, gas capture at landfill
- 20 Explore Port decarbonisation opportunities

Opportunity backlog

De-prioritised as immediate priorities but could be revisited in future

- 1 Finance the conversion of the municipal fleet to EVs
- 2 Finance the conversion of taxis to EVs
- 6 Provision of a basket of low emission fuels to medium and heavy duty municipal fleets e.g. biofuels, CNG, RNG
- 8 Explore hydrogen (green and blue) role in zero carbon transportation
- 18 Provision/development of low-carbon jet fuel from biowaste
- 21 Explore Airport decarbonisation opportunities

Transportation · Energy transition · Building optimisation · Materials management · Assets and infrastructure · Innovation

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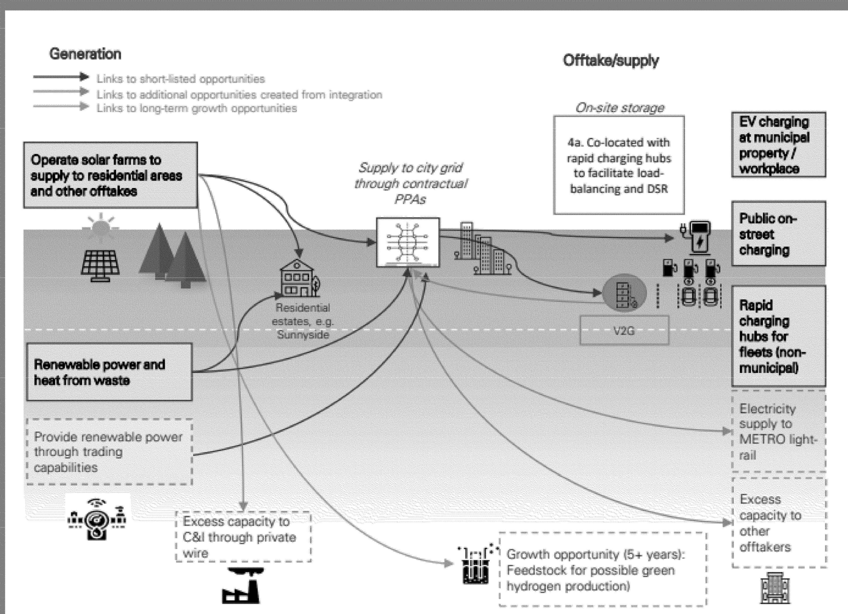
Illustration of Houston Integrated Power Provider Solution (KPMG work product)



Activities:

- Develop grid-scale solar projects to support provision of green power to the city, initially leveraging trading capabilities to fulfil demand
- Deploy EV charging infrastructure on street, at municipal locations and at EV charging hubs for B2B fleets with co-located battery storage solutions (with the option of facilitating V2G supply)
- (*Long-term)* Expand charging offerings to other fleets/properties as existing contracts lapse, e.g. NRG
- *(Long-term)* Supply excess renewable power to other offtakers, C&I, or as potential feedstock for green H2
- Value is driven from providing stable renewable energy supply to the city, securing possible preferential rates

Challenges:

- Projected slow EV adoption in short-term
- bp to focus on cost-efficiencies to protect margins
- Upgrades required for technology back-end to enable load-balancing
- Significant investment and coordination with city stakeholders to build and own generation asset(s) across Houston, with positive cashflow dependent on securing sufficient volume of offtakers

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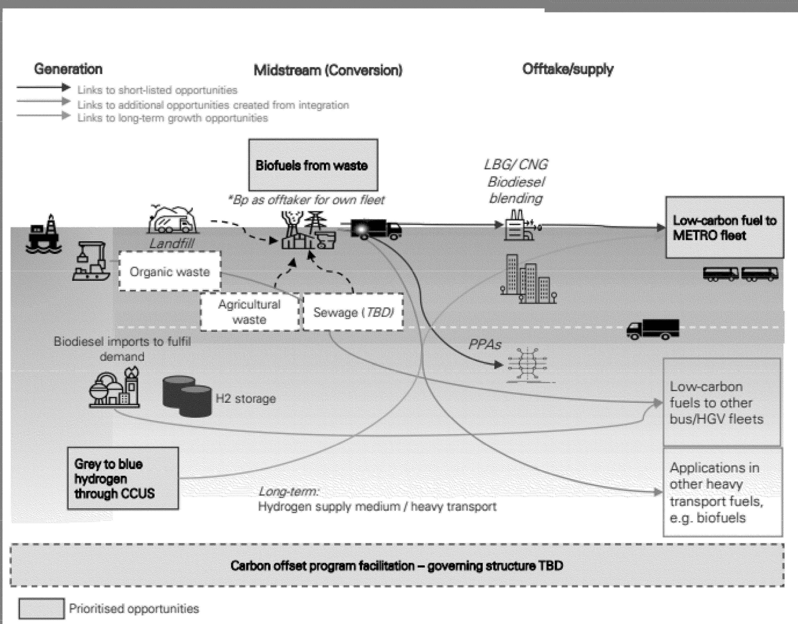
Illustration of Houston Low-carbon Transportation Solution

(KPMG work product)



Note: opportunities which have not been prioritised will not be assessed commercially as part of the detailed business plan

Activities:

- Procure RNG and biodiesel to supply to METRO and MGV/HGV fleets through bp T&S
- Develop portfolio of city-specific carbon offset programs to assist in city decarbonisation goals
- Own and operate AD plant to supply RNG to fleets, with bp as offtaker in fuelling its own transport vehicles (advocating closed-loop system)
- (*Long-term)* Supply excess electricity generated from AD plant to grid via PPAs (*see integration play 1)*
- *(Long-term)* Supply excess RNG to other offtakers, e.g. biojet
- (*Long-term)* Operate select CCUS projects within Houston's Shipping Channel to convert grey hydrogen to blue – with the option of operating H2 storage

Challenges:

- Securing contracts with METRO and other HGV fleets across various low-carbon fuel types is dependent on adoption and available infrastructure
- Establishing sufficient corporate sponsors for carbon offset programmes will require intense coordination across stakeholders
- Securing sufficient feedstock is critical to enabling consistent supply of biofuels and power
- Hydrogen is a long term play for bp and the city, and will depend on demand and city conditions

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Part 4: Next Steps

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Recommended next steps

- In 1Q 2021, RC&S to amalgamate various strategy efforts currently underway; provide integrated view through the lens of customers that includes:
  - A contrast of existing bp capability at a regional level versus required level of capability to lead, and whether the capability should be owner or accessed through third parties.
  - Scale of opportunity to reduce emissions and deliver value by end customer segment.
- Following work in 1Q, S&S to prepare a strategy analysis for one of the four priority zones identified in the US.
- RC&S specific:
  - Clarify roles and responsibilities between RC&S and individual businesses.
  - Establish US Business Development and Origination integration forum with cross-business representation.
  - Finalize criteria for early-screening potential candidates.
- In partnership with other groups:
  - **Redacted - First Amendment**
  - I&E: Develop bp view of long-term technology themes in the US.

Priorities in 2021

- Deliver cash generating options in Houston

Originate relationships in the following Low Carbon Opportunity Zones:

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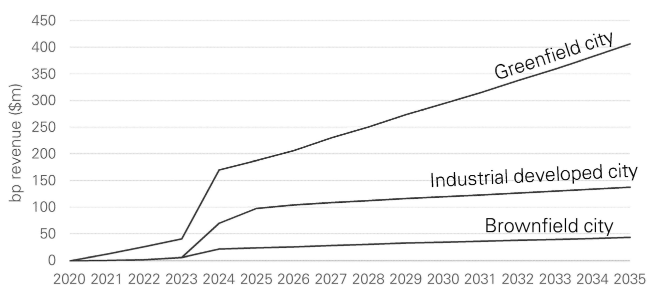
Further refine targets and pursue relationships with:

- One major consumer brand, e.g. Verizon
- One major industrial, e.g. Reliance Steel
- One major transportation, e.g. Port Authority of NY/NJ

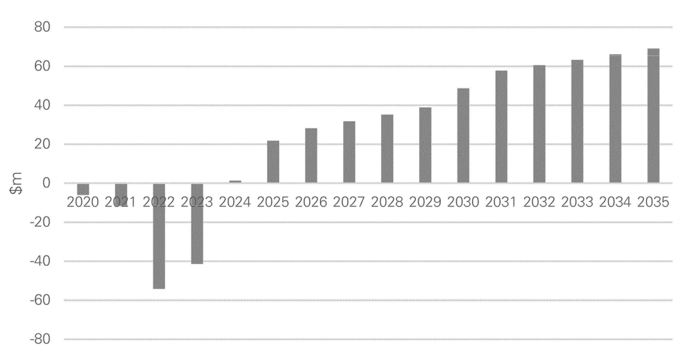
Back-up slides

The value from integrated solutions for cities will depend on the archetype

Cities – potential bp revenue range per integrated solution



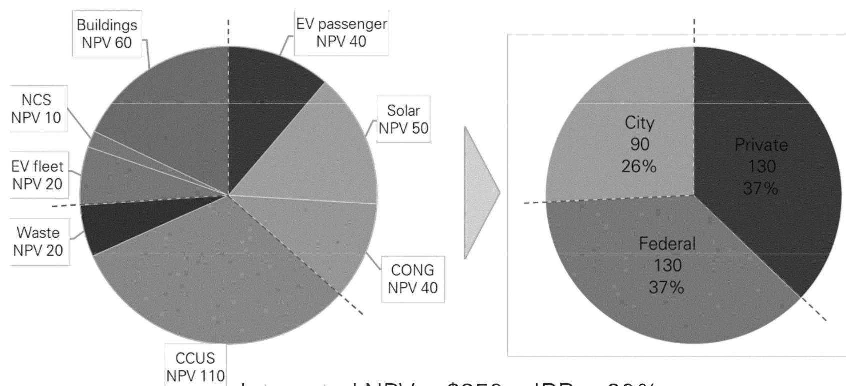
Cities – pre-tax cashflow for an industrial developed city



Assumptions

- City population of ~2 million
- Scale and source of value differ by city archetype:
  - Industrial developed cities may include offers like CCUS, EV charging, solar energy, renewable natural gas, carbon offset natural gas (CONG), NCS and building efficiency solutions
  - Greenfield city solutions don't include CCUS but have scaled up assumptions for other offers

Cities – pre-tax NPV by source of value & by stakeholder for an industrial developed city:



Integrated NPV: ~$350m IRR: ~20%

What is an "Opportunity Zone"?

- Opportunity Zones give both individuals and corporations the chance to re-invest existing capital gains into Qualified Opportunity Zone Funds ("QOFs") in order to receive tax breaks for helping fund investment in impoverished areas.
- OZs are located in 8,700 communities across all 50 states and the 5 US territories, including 878 in California and 862 in Puerto Rico.
- There are over $6 trillion in eligible capital gains within the US and $300 billion of it has been earmarked for Opportunity Funds to date.
- The program provides three tax benefits for investing unrealized capital gains in Opportunity Zones:
  - Temporary deferral of taxes on previously earned capital gains. Investors can place existing assets with accumulated capital gains into Opportunity Funds. Those existing capital gains are not taxed until the end of 2026 or when the asset is disposed of.
  - Basis step-up of previously earned capital gains invested. For capital gains placed in Opportunity Funds for at least 5 years, investors' basis on the original investment increases by 10 percent. If invested for at least 7 years, investors' basis on the original investment increases by 15 percent.
  - Permanent exclusion of taxable income on new gains. For investments held for at least 10 years, investors pay no taxes on any capital gains produced through their investment in Opportunity Funds (the investment vehicle that invests in Opportunity Zones).

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Corporate emission reduction targets in the US

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Table 2: List of Fortune Global 500 companies that have made a public commitment that they are, or will be, carbon neutral.

Today	Future	
	2020-2030	2035-2050
now	**2020**	**2035-2045**
Achmea Allianz Alphabet Australia & New Zealand Banking Group BNP Paribas Capital One Financial Credit Suisse Group Deutsche Bank Goldman Sachs Group ING Group La Poste MetLife Microsoft Munich Re Group National Australia Bank Swiss Re Tokio Marine Holdings Toronto-Dominion Bank Zurich Insurance Group	Bank of America Corp. Bosch Group L'Oréal **2022-2025** Coop Group Morgan Stanley Novartis SAP **2030** E.ON ENI LG Electronics Schneider Electric Siemens State Bank of India Unilever	BT Group Daimler Verizon Communications **2035-2045** Centrica Danone Deutsche Post DHL Group Electricité de France Enel Fujitsu GlaxoSmithKline Iberdrola Maersk Group Panasonic Sony Tesco Toyota Motor Volkswagen

US companies with carbon neutral commitment

Other major US companies with carbon reduction targets (less than carbon neutral)

- Xerox
- Whirlpool
- Walmart
- Union Pacific
- Port Authority of NY and NJ
- Kraft
- Heinz
- Hershey
- Coca Cola
- Starbucks
- Schlumberger
- Republic Services
- Procter & Gamble
- Pepsi
- Owens Corning
- McDonalds
- LA Dept of Water and Power
- HP
- Hilton
- HP
- General Mills
- Ford
- Dell
- CSX Corp
- Crown Holdings
- CVS Pharmacies
- Conagra
- Cisco
- Best Buy
- Ball Corp
- AMD

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