



RC&S US Focus Analysis

December 2020

RC&S

RC&S

Confidential

BPA_HC0R_00331085

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.

2



RC&S

Confidential

BPA_HCOP_00331086



Part 1: US Context

Confidential

RC&S

BPA_HC0R_00331087

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



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

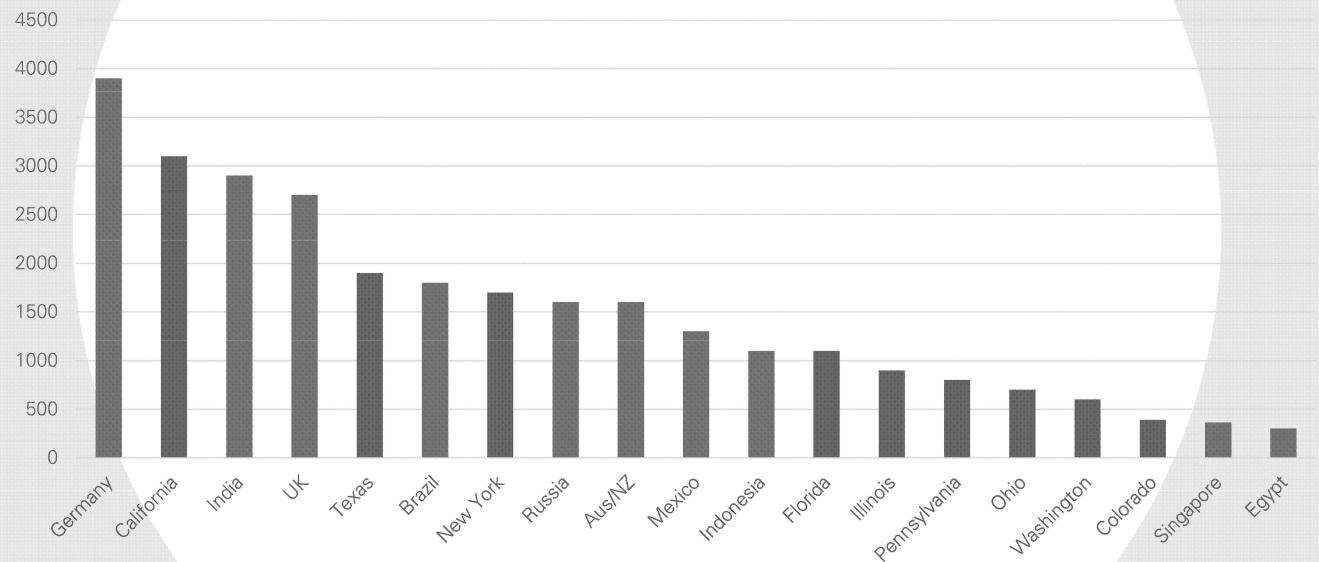
16

- 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



GDP (2019 US\$ million)



*Excludes China (\$14200) for scale

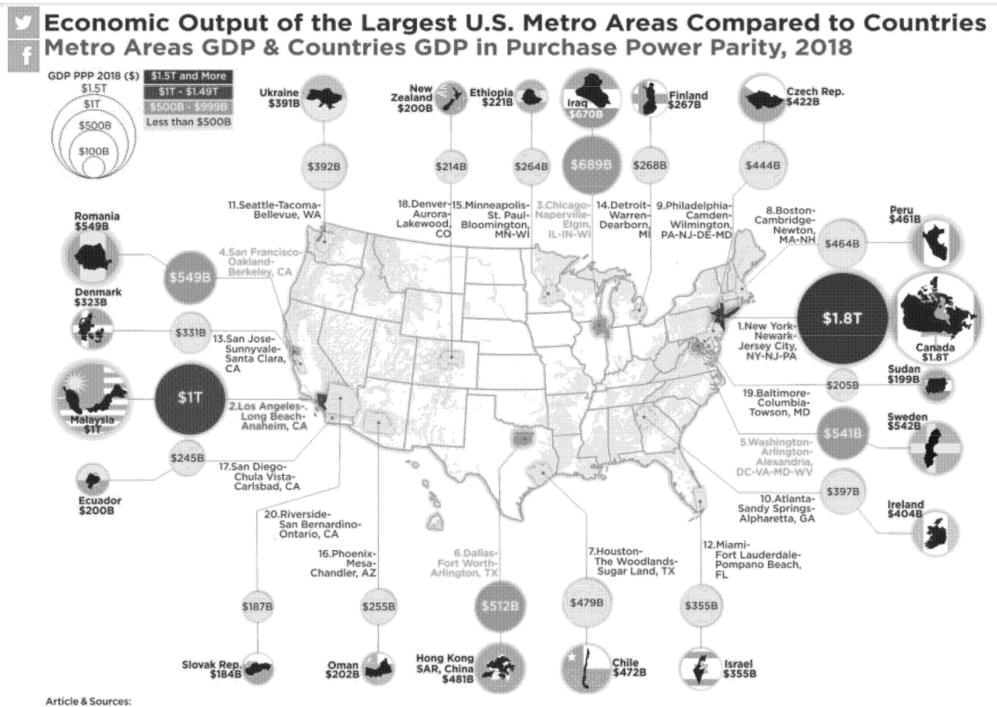
5

RC&S

Confidential

BPA_HCOP_00331089

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



howmuch.net



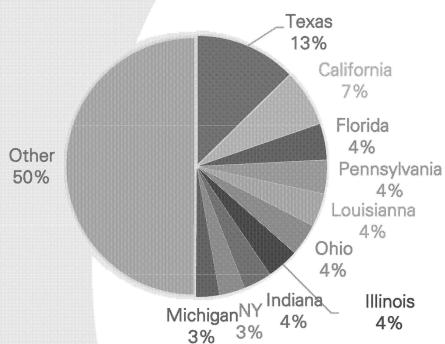
RC&S

BPA_HCOP_00331090

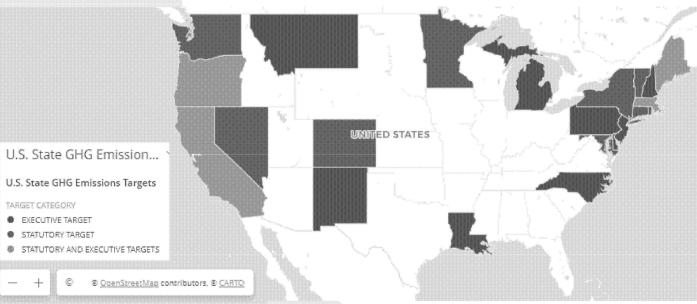
Opportunity at scale in the US is focused in 10 of the 50 states



ANNUAL CO2 EMISSIONS (2016)



Total Carbon Footprint (Mt CO2)



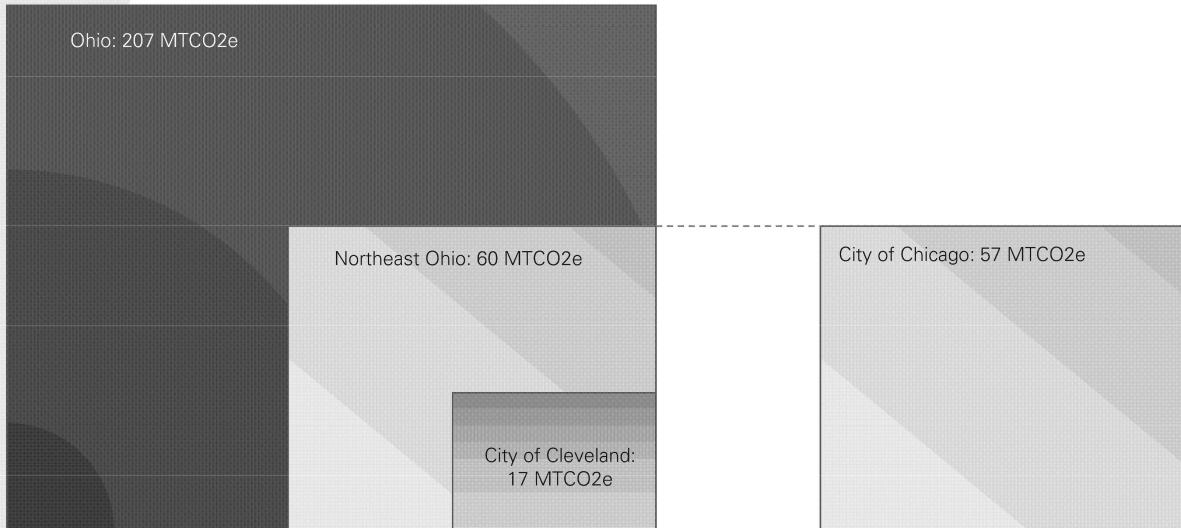
- Ten states account for half of all US emissions
- NY, LA and Chicago represent a global-scale footprint
- Western and Northeastern states have the most binding, i.e., statutory, commitment to reducing emissions.
- Only 2 of 10 top emitting states (NY and CA) have statutory commitments to reducing emissions.

RC&S

Confidential

BPA_HCOP_00331091

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



Changes to Federal Energy and Environment Policy



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.

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

Confidential

RC&S

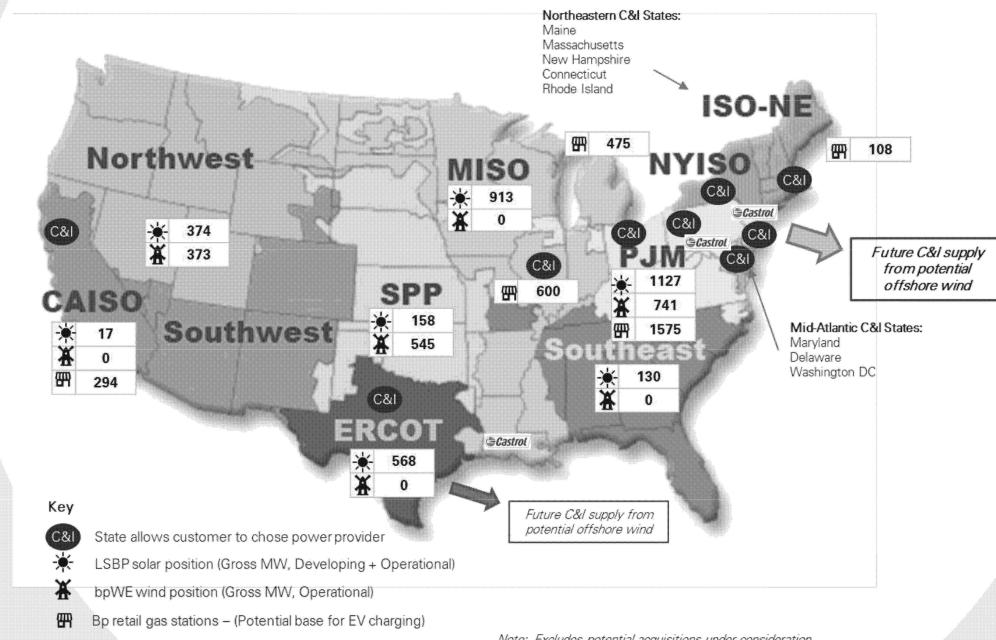
BPA_HC0R_00331095

Redacted - Commercially Sensitive Material

Overlap of non-P&O assets in the US: Capability is regionally focused



Geographic Overlay: ZCE Generation, wholesale power markets, and C&I power choice states



RC&S

BPA_HC0R_00331101

Redacted - Commercially Sensitive Material

Individual bp business/enabling strategies in the US

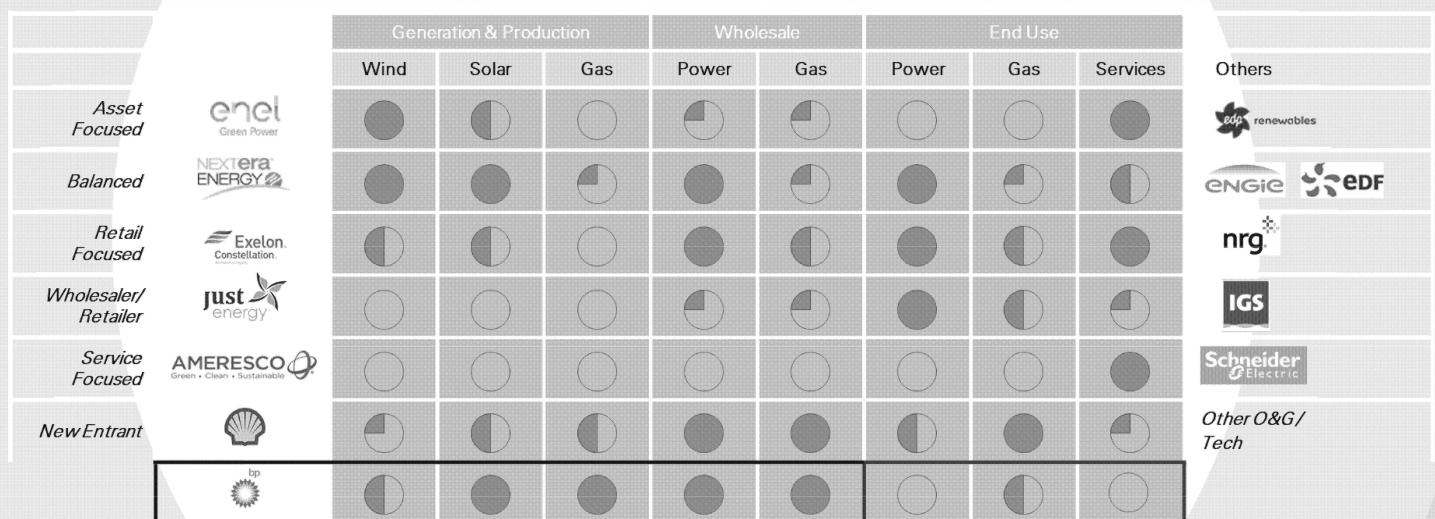


	C&P	GPTA	RPT	G&LCE
US Strategy in place?	Integrated growth in existing markets; targeted geographic and technology inorganics	Trading, asset optimization	Trading, asset optimization, growth in low carbon origination and trading	<ul style="list-style-type: none"> Overarching business strategies in place (not regional) Regional strategies TBD but key country focus areas are clear
Priorities	<ul style="list-style-type: none"> Maximize integrated value Increase customer touch points, including convenience Expand offerings to include EV, renewables, hydrogen, and lower-carbon solutions 	<ul style="list-style-type: none"> Green offering Unique customer solutions Expansion further down the value chain Technology as a growth driver 	<ul style="list-style-type: none"> Deliver integrated value and optimization for bp and third parties Grow in biogas, renewable fuels, natural climate solutions, and other emerging low carbon sectors 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Renewable products Bundled products and credits Capital light investments in growth areas, including waste to energy, renewables, infrastructure 	<ul style="list-style-type: none"> Establish with T&S, a C&I customer facing business with EAAS capabilities CCUS capabilities MSW to Biojet

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



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



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

RC&S

Confidential

BPA_HC0R_00331104

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



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

Redacted - Commercially Sensitive Material



Part 3: How to play: City of Houston Integrated Solution

Confidential

RC&S

BPA_HC0R_00331107

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

Decarbonization of mobility

- Electrification
- Biofuels

Decarbonized Infrastructure

- Airports
- Port of Houston
- CCUS

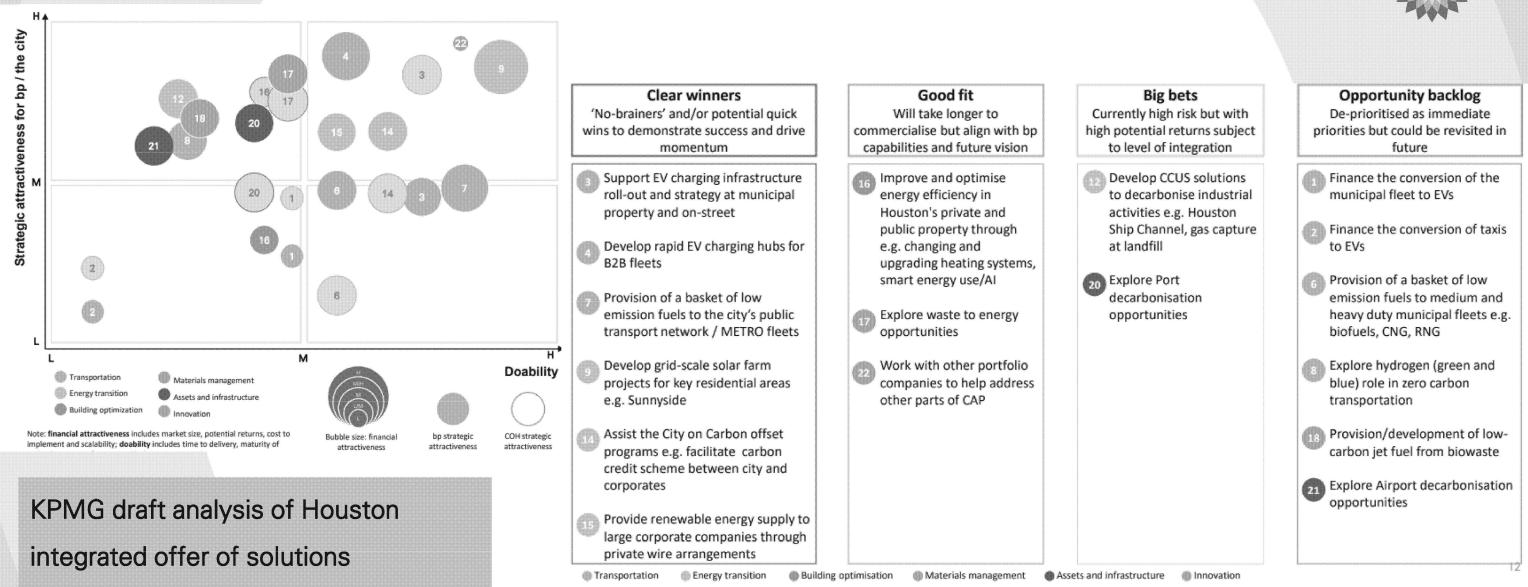
Building/Energy management

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

Opportunity Incubation

- Hydrogen

Illustration of an integrated offer – Houston draft



KPMG draft analysis of Houston integrated offer of solutions

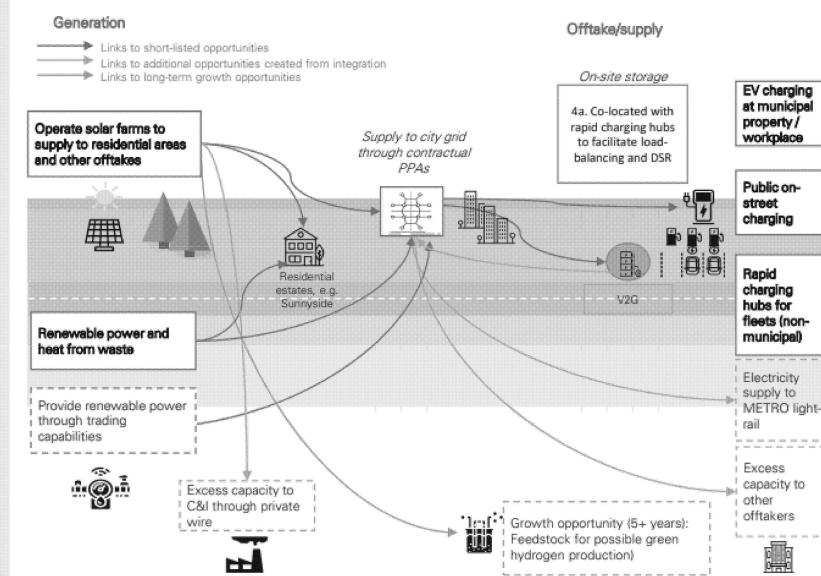
25

Confidential

RC&S

BPA_HCOR_00331109

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

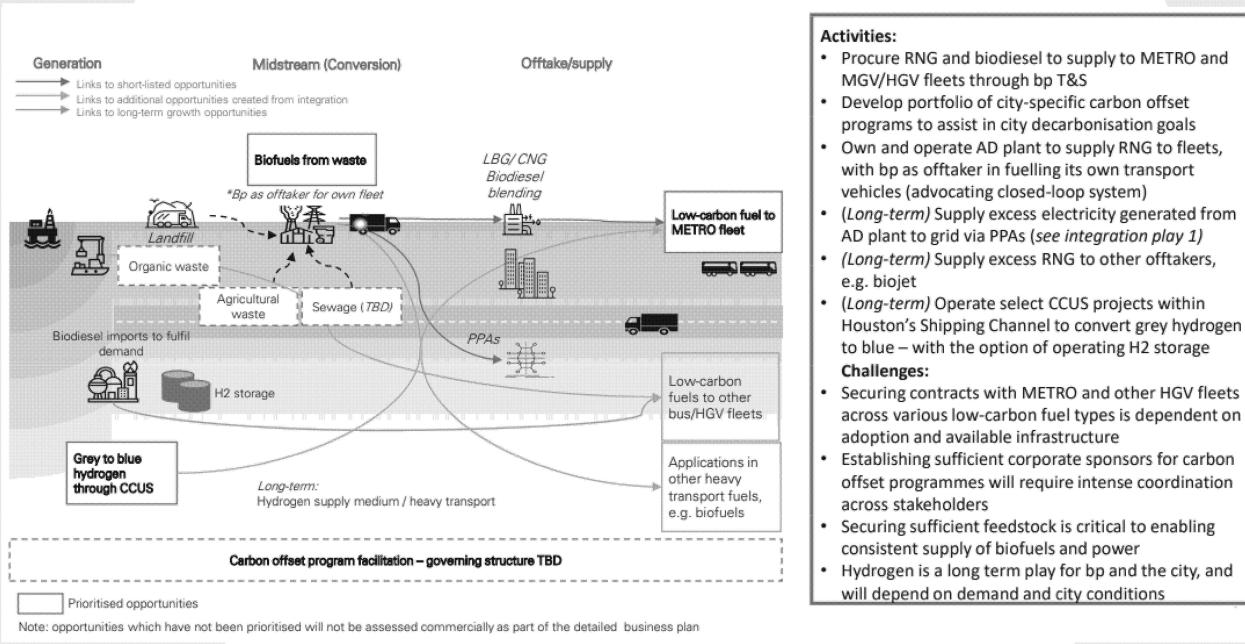
Confidential

RC&S

BPA_HCOP_00331110

Illustration of Houston Low-carbon Transportation Solution

(KPMG work product)



Confidential

RC&S

BPA_HCOP_00331111



Part 4: Next Steps

Confidential

RC&S

BPA_HC0R_00331112

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:

- **Redacted - Commercially Sensitive Material**
-

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

31

Confidential

RC&S

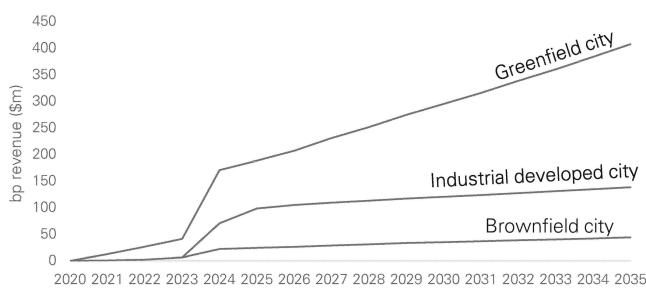
BPA_HC0R_00331115



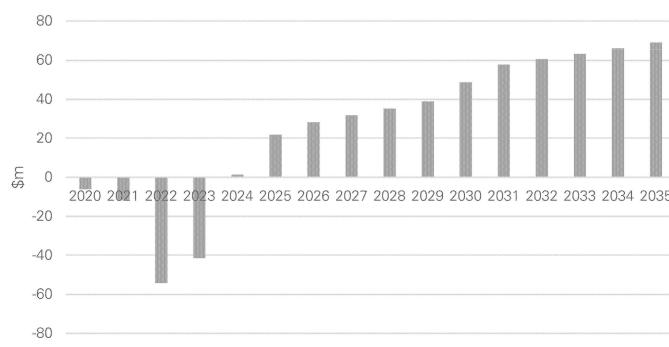
FINANCIAL IMPACT: SIZE OF THE VALUE AND RETURN, AMPLIFICATION OPPORTUNITY AND EVOLUTION OVER THE NEXT 10+ YEARS

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

Cities – potential bp revenue range per integrated solution



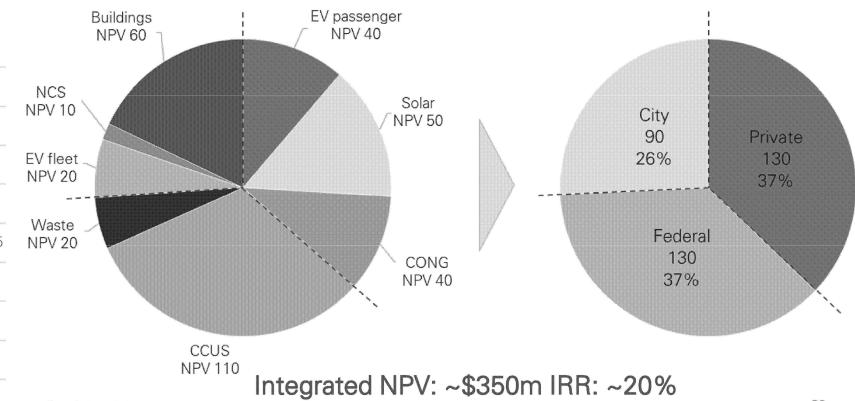
Cities – pre-tax cashflow for an industrial developed city



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:



Confidential

32

BPA_HCOP_00331116

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).

Redacted - Commercially Sensitive Material

Corporate emission reduction targets in the US



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

Today		Future	
now		2020-2030	2035-2050
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			
		2020	2035-2045
		Bank of America Corp.	
		Bosch Group	
		L'Oréal	
			2035-2045
			BT Group
			Daimler
			Verizon Communications
		2022-2025	
		Coop Group	
		Morgan Stanley	
		Novartis	
		SAP	
			2035-2045
			Centrica
			Danone
			Deutsche Post DHL Group
			Electricité de France
			Enel
			Fujitsu
			GlaxoSmithKline
			Iberdrola
			Maersk Group
			Panasonic
			Sony
			Tesco
			Toyota Motor
			Volkswagen
		2030	
		E.ON	
		ENI	
		LG Electronics	
		Schneider Electric	
		Siemens	
		State Bank of India	
		Unilever	

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

Confidential

BPA_HC0R_00331119

Redacted - Commercially Sensitive Material

Redacted - Commercially Sensitive Material

Redacted - Commercially Sensitive Material