

Clean Tax Cuts for Clean Technology – Charrette Summary

On Tuesday, April 4, 2017, ASU LightWorks® convened a policy design charrette, an expert-level working group, exploring the application of the new [Clean Tax Cuts](#) (CTC) concept to clean technology. The gathering, held at the Julie Ann Wrigley Global Institute of Sustainability at Arizona State University (ASU), was one of seven sector-specific charrettes held around the United States to design and explore proposals using supply-side tax rate cuts to accelerate capital to profitable and innovative clean solutions. The goal of the LightWorks® Charrette was to develop simple, practical, high-impact CTC policy proposals that would benefit both clean technology R&D, and the implementation to scale of effective clean tech solutions. Participants focused mostly on technology that reduces concentrations of air pollutants in the atmosphere.

Pioneered by the Grace Richardson Fund (GRF) and the CTC Working Group, CTC targets primarily capital tax rates investors pay on debt and equity in clean investments. Targeting capital barriers accelerates capital to clean solutions simultaneously, by reducing tax rates and therefore the weighted average cost of capital (WACC) for clean solutions. CTC employs carrots, not sticks, and picks metrics, not winners or losers. Mechanisms include only positive feedback loop mechanisms to reward profitable, sustainable technologies that monetize waste reduction... without punishing or demonizing a technology or business sector. With these design principles, CTC aligns conservative, progressive, consumer and business interests on energy, environmental protection, and economic growth.

Discussion for this charrette overlapped that of the power sector charrette, occurring a week earlier in Colorado. Both charrettes discussed some of the same key points:

- Current climate policy is based on the assumption, no longer true, that clean solutions cannot compete without price adjustments or control mechanisms (such as tax credit price support subsidies, carbon pricing and regulatory mandates and penalties). These policy tools seem increasingly out of date since 2015, when utility scale wind and solar achieved a lower levelized cost of electricity, unsubsidized, than fossil fuels. Therefore, capital acceleration for these and other emerging industries through simple capital tax rate reduction now appears the more impactful and on-target policy option.
- By reducing WACC, CTC has the potential to mobilize investors to commit substantially more debt and equity capital, while directly reducing costs of outputs for clean solutions. This increases both supply and demand, driving growth, with competition at scale reducing costs further. So CTC accelerates cheaper clean solutions in three ways.
- In the race to scale, CTC is more efficient, with better dynamic growth potential and better GDP and environment impact versus most subsidies. So, CTC offers a more attractive deal to investors, paving the way for a voluntary business-led transition to from subsidies and regulation to CTC and profitable clean tech deployment at scale.

See the power sector charrette report for a more detailed discussion of these points.

Participants suggested and reviewed a range of CTC straw proposals. Most felt the proposals coming out of the earlier [green bond](#) and [power sector charrettes](#) provided an attractive model:

- [Tax-Free Clean Asset Bonds \(CABs\)](#) providing tax-exemption on debt interest on loans and bonds for manufacture, installation and operation of assets with proven impact. Emission Reduction Bonds (ERBs), a variation, finance zero emission power sources.

- [Clean Equity Half-Tax or Quarter-Tax-Cut](#): 50% or 25% off taxes on corporate and personal income, capital gains and dividends in proportion to the percentage of taxable income derived from revenue from zero emission energy.

Taken together, these core CTC power sector proposals create complimentary debt and equity side mechanisms to accelerate scalable clean energy and emission reductions profitably, and can be adapted to the needs of clean tech in a variety of ways.

Some participants suggested fossil fuel power sources might be allowed to qualify as “zero-emission” (and so qualify for the above clean tax cuts) either through CO₂ capture at the stack, or by offsetting emissions with direct air CO₂ capture at a remote site. Others objected that offsets allow pollution to continue at the source, sometimes in heavily populated areas; and that such pollution often goes far beyond simple CO₂ emission, entailing mercury, arsenic, nitrous oxide, hydrogen sulfide, black carbon particles, etc., which cannot be offset. The alternative suggestion was that CTC should more directly incentivize and accelerate both emission reduction at the source, and other remote emission reducing solutions, such as air capture, without using offsets or carbon trading.

The key to direct acceleration of carbon capture at the source and remote air capture would be to increase the profits from, and decrease the cost of, captured carbon products, by using CTC to decrease the cost of capital for all carbon capture systems and product manufacture. (See attached list of major captured carbon product categories).

This market can be accelerated. On the debt side, **tax-exempt Clean Asset Bonds** could be used to finance the manufacture all carbon capture systems and products, at the lowest possible cost of capital. On the equity side, a **Clean Half-Tax** could reduce all equity-side capital taxes on returns from such clean tech products, accelerating such clean investments by making them much more profitable.

These CTC tools could also accelerate other kinds of clean tech, including waste-to-clean-energy and other kinds of waste recycling systems. For instance, these CTC tools could finance and accelerate the manufacture of products and fuels made from recycled plastics, reducing plastic waste by making it a valuable feedstock.

In order to stimulate innovation and R&D, participants suggested **Immediate Tradable Clean Expensing** for clean tech firms seeking to improve efficiency and impact of the above waste reducing technologies and products. Immediate expensing is a concept borrowed from the GOP Better Way tax plan. Making such expensing tradable would provide a strong mechanism for financing R&D and pre-profitable technology development – without offsets.

Some participants noted that immediate expensing might help specific product development, but basic early stage research capable of spawning new technologies and industries would still likely need public or philanthropic funding, and the scientific resources and critical mass of a research university. Key research activities meriting such support are:

- research grants needed to develop the basic science and technologies which can create proof of concepts leading to prototypes and
- Prototypes leading to scaled up pilot projects.

Major Captured Carbon Product Categories

It was noted that the new carbon economy will need to develop new products that used carbon. The Global CO₂ Initiative, which studies ways to reuse captured CO₂, identifies a potential \$1 trillion annual market for at least 27 major CO₂ based product categories as follows:



Construction Materials

- Cement and concrete
- Asphalt
- Aggregate
- Timber/super hardwood



Fuel

- Synthetic (methanol, butanol, natural gas, syngas, etc.)
- Micro-algae fuel
- Macro-algae fuel



New materials

- Carbon fiber
- Carbon nanotubes and fullerenes
- Graphene



Industrial gas & fluids

- Enhanced oil recovery
- Enhanced coal bed methane recovery
- Enhanced water recovery
- Semiconductor fabrication
- Power cycles



Plastics

- Polyurethane foams
- Polycarbonate (glass replacement)
- Acrylonitrile butadiene styrene
- Many more



Agriculture & food

- Algae-based food or animal feed
- Microbial fertilizer
- Biochar, bio-pesticides, bio-cosmetics



Chemicals

- Preservatives (formic acid)
- Medicinal
- Antifreeze (ethylene glycol)
- Carbon black
- Many more