Less Certain Than Death: Using Tax Incentives to Drive Clean Energy Innovation

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  - Trade and globalization
  - Life sciences, agricultural biotech, and energy
- Formulates and promotes policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress
- World's top think tank for science and technology policy, according to the University of Pennsylvania's authoritative *Global Go To Think Tank* Index

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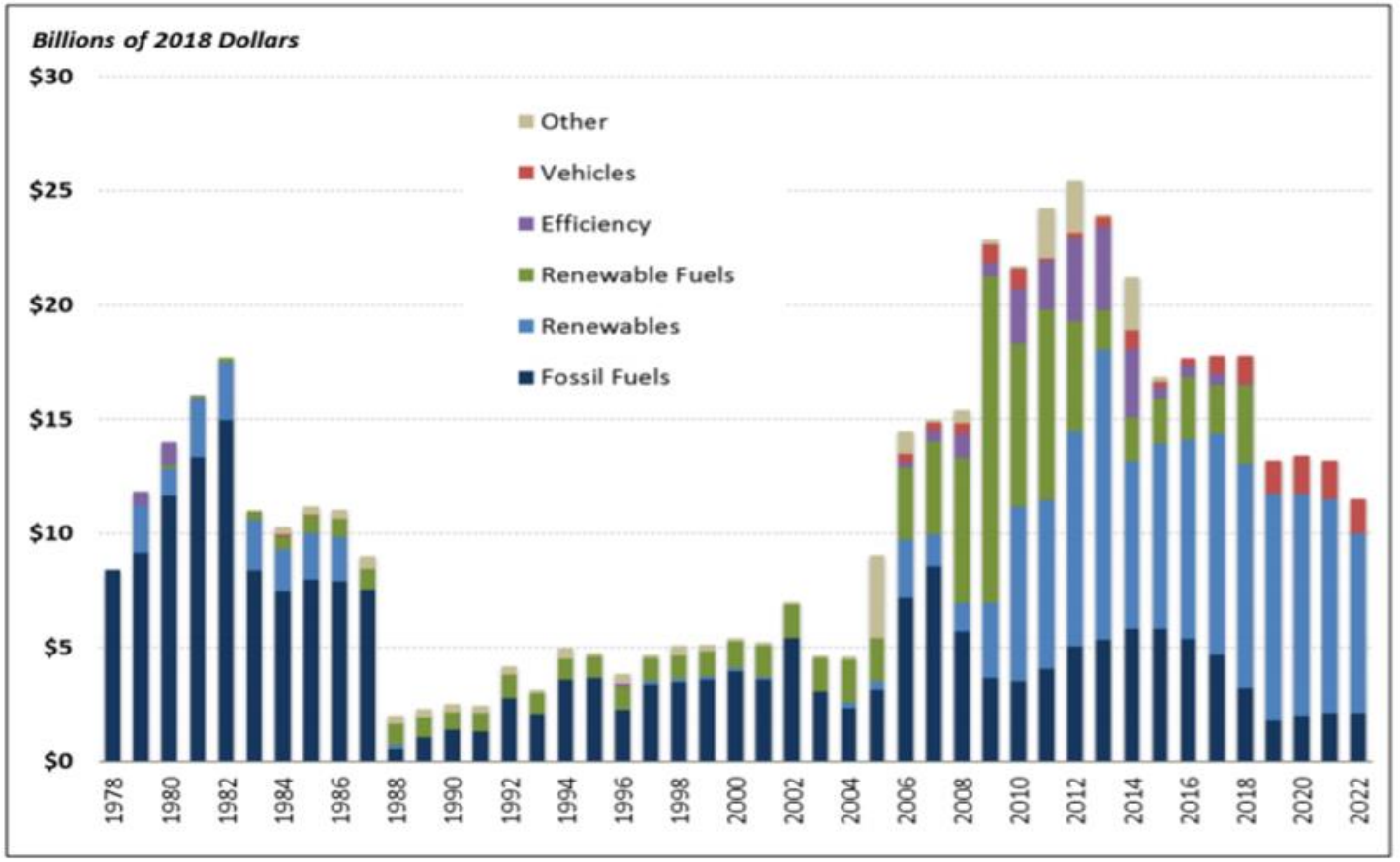
Carbon Price and Technology Incentives: Two Tools for Two Jobs

- Carbon price is like sandpaper
  - Broad impacts
  - Incremental innovation
- Tax incentives are like a saw
  - Targeted impacts
  - More radical innovation
- Example: Fuel taxes in Europe

“Real Money”

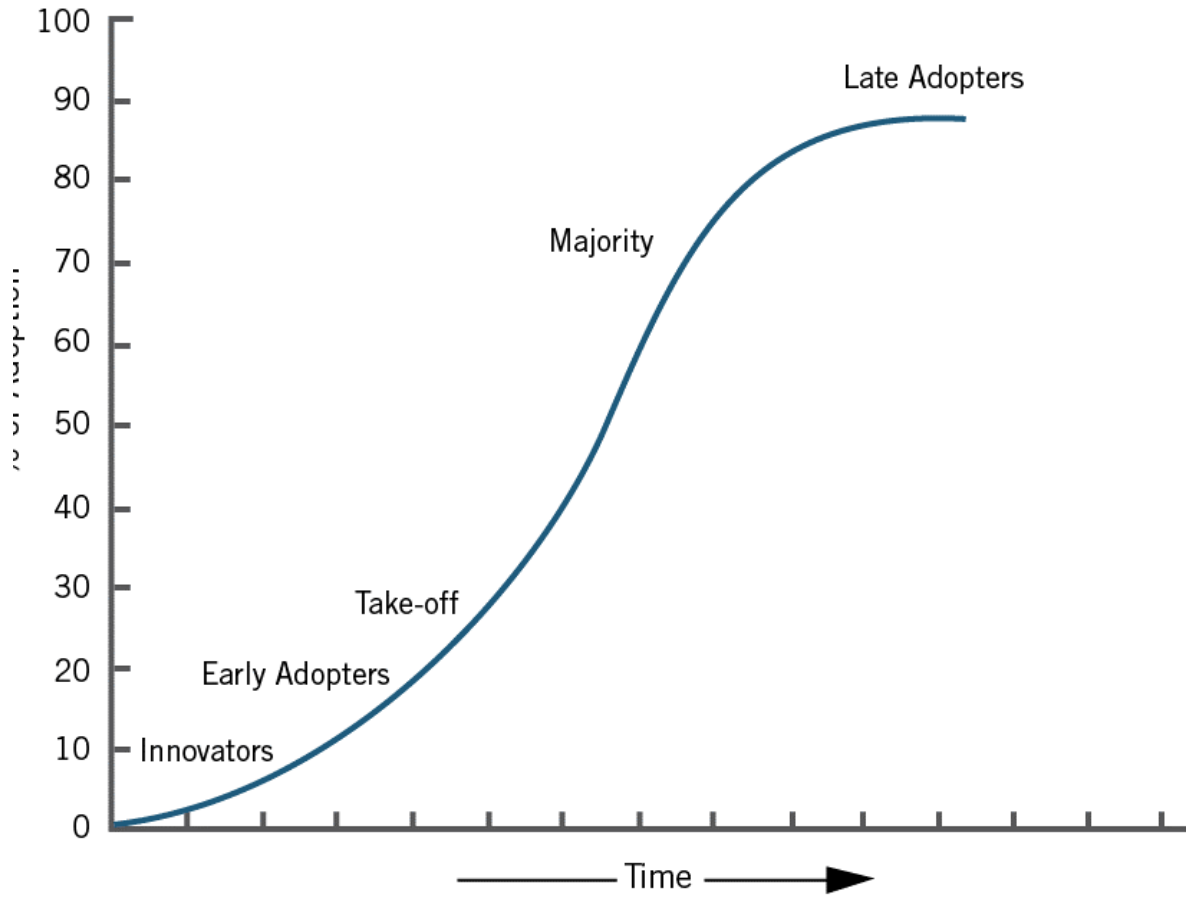
- Two waves
- FY17 cost = $18 billion
  - Wind PTC = $5 billion
  - Solar ITC = $2.5 billion
- Reference points:
  - DOE energy R&D = $7 billion
  - Estd. federal & state support for fossil fuel production = $15 billion



Source: CRS, March 2019

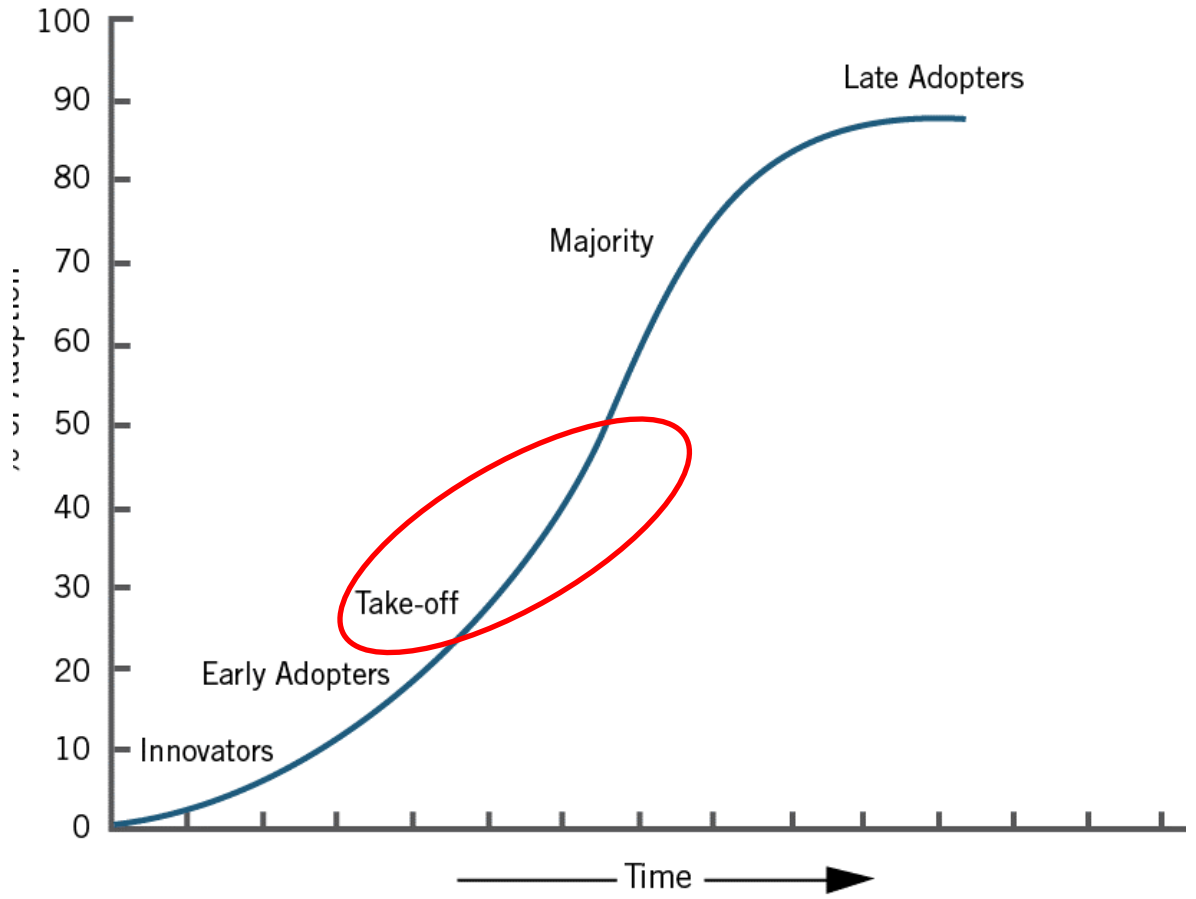
Timing Matters

- Policy sequence
  - R&D funding
  - Demonstration/validation
  - Tax incentives
  - Carbon price
- Tax incentive pathologies
  - Too early
  - Too late



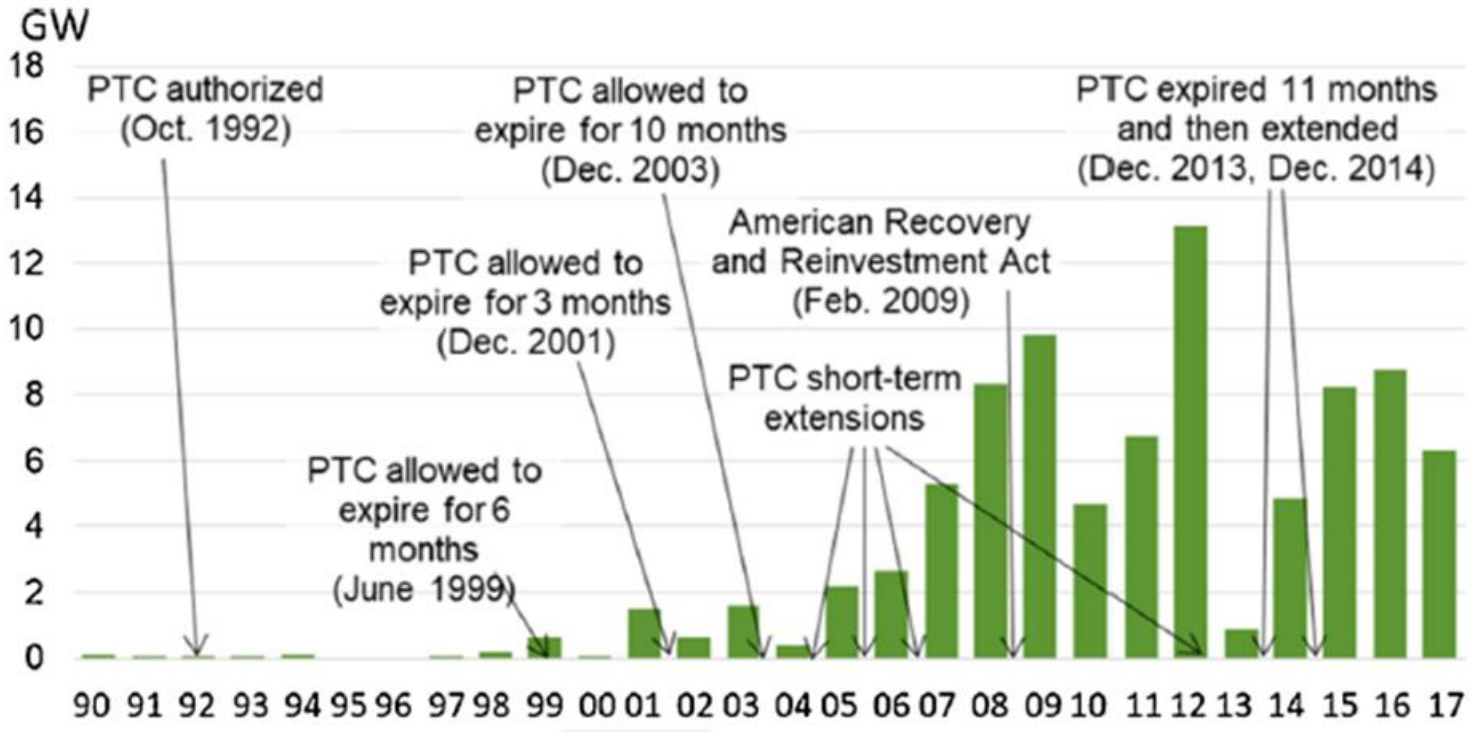
Timing Matters

- Policy sequence
  - R&D funding
  - Demonstration/validation
  - Tax incentives – take-off phase
  - Carbon price
- Policy mistakes
  - Too early
  - Too late



Stability Matters, Too

- Successful takeoff
  - Long-lived investment
  - Accumulated experience
- Potholes on the runway
  - Uncertainty
  - Retroactive extensions
  - Lapses



Source: Frazier, Marcy & Cole, 2019

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Power, Buildings, Cars—Oh My!

Power Sector	Building Sector	Transportation Sector
• Production Tax Credit • Investment Tax Credit	• Appliance Manfg. Tax Credit • EE New Home Credit • EE Commercial Building Deduction	• Plug-in Electric Vehicle Tax Credit

Criteria

- Duration
- Value
- Beneficiary
- Manufacturer cap
- Assignability
- Executive oversight

What Did We Get Right…

- Complementary policies
- Technology-neutral
- Performance-based
- Continuous improvement

What Did We Get Wrong…

- Expire, reinstate, repeat
- (Mis)aligned incentives
- Lack of analytic rigor
- One size fits all

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Principles

1. Apply tax incentives when clean energy technologies are approaching readiness for large-scale adoption—not before—and **remove them** after the target technology has had a fair chance to establish a strong user base.
2. Absent a carbon price or other overarching climate policy, **apply a tiered incentive** system that provides next-generation, emerging clean-energy technologies with a more-generous incentive than it does for already widely deployed technologies.
3. Set the broad framework for tax incentives through the legislative process, but **delegate detailed decisions** about eligibility and duration to the executive branch.
4. **Reward risk-taking** by targeting tax incentives at early adopters, benefiting the innovators that offer these early adopters the most compelling products.
5. Use the **whole policy toolbox** and the right policy tool for each task to ensure that low-carbon energy innovations mature as quickly as possible.

Thank You!

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