



National Educational Forum on the Wood Heater NSPS

Current & Emerging Technologies

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November 8, 2012

Common Goal - Reduce Woodsmoke

- **Regulatory Agency's - Bounded by Technological Feasibility & Cost Effectiveness**
- **Industry - Bounded by Consumers willingness to Buy!**
 - Especially true for replacements of existing stoves
 - Consumers need a value proposition



Where Have We Come From?

15 – 20 Million old
Stoves & Inserts in use
by Mid -1980's

- 2nd Oil Embargo taught American's to "Be Prepared"
- Energy prices spikes of last 15 years havn't changed their minds



Industry Innovations - last 30 years

- Catalytic Woodstoves (pre 1980)
- Large Non-Catalytic Woodstoves
- Pellet Stoves (~mid '80s)
- Self-Igniting pellet stoves 1989
- Multi-fuel stoves, Gas-Wood
- Down-draft Hydronic Heaters
- Electric Quick Start
- Mechanical Timers



Innovations From Other Countries

- **Early New Zealand Non-Cats**
 - Bosca - 1984
- **Masonry Heaters**
 - TuliKivi
- **Pellet Boilers**
 - H.S. Tarm ~ early 1990's



But - Not all Innovations Work!

- Woodstove retrofits –Warranties!
- Many early non-cat and cat designs
 - (often too restrictive exhaust)
- Many poorly designed bypasses - both cat and non-cat
- First woodstove with microprocessor
 - Colorado 1984-86
- Retrofit pellet units - worked, just not worth the cost
- Down Draft Gasifier Boilers – Essex – 1984



Future Innovations?

- By Definition – True Innovations are:
 - Unanticipated
 - Unique
 - Fool Proof & Fail Safe
 - Perform in a wide variety of homes
 - Have long lead times
 - Satisfy Consumers
 - Do not have excessive warranty claims

