ENERGY STAR®

Set-top Box Specification Revision

Draft 1 Stakeholder Meeting

19 March 2010

Agenda

1. **Welcome / Goals**
   Kathleen Vokes, US EPA
2. **Version 3.0 Timeline**
   Kathleen Vokes, US EPA
3. **Draft 1: Summary of Changes**
   Steve Pantano, ICF International
   Tom Bolioli, Terra Novum
4. **Lunch Break**
   Consortium for Energy Efficiency
5. **Stakeholder Presentation**
   Natural Resources Defense Council
6. **Service Provider Considerations**
   Darcy Martinez, ICF International
7. **Wrap-up & Conclude**
   Kathleen Vokes, US EPA

ENERGY STAR Overview

- Guiding Principles of Specification Development
  - Cost-effective efficiency
  - Performance maintained or enhanced
  - Significant energy savings potential
  - Efficiency improvements are achievable with non-proprietary technology
  - Product differentiation and testing are feasible
  - Labeling can be effective in the market

Version 3.0 Goals

- Resolve “TBDs” for DOCSIS & CableCARD
- Revisit Tier 2 Version 2.0 TEC limits
- Identify new product features/functions for consideration for new allowances
- Expand scope to include retail IP STBs
- Clarify definitions and qualification criteria
- Revisit Manufacturer & Service Provider partner commitments

Timeline

- First stakeholder conference call 12/3.
- Test procedure distributed 12/7. Data collection completed 1/19. Supplemental data collection completed 3/10.
- Draft 1 distributed 2/22. Comments due 3/23.
- In-person stakeholder meeting 3/19.
- Final draft STB requirements and first draft Service Provider requirements to be distributed April 2010.
- Final STB and Service Provider requirements May 2010.

Version 3.0 Effective Date

- Moved all specification effective dates from January to June, to align with product development cycles
- Changed the Tier 1 Version 3.0 effective date to June 1, 2011
- Added Tier 2 Version 3.0 requirements, with an effective date of June 1, 2013

Definitions

- Modified Base Type definitions, including:
  - Cable, IP, Satellite, & Terrestrial explicitly include delivery of content to thin-clients, to accommodate Multi-room architectures
  - “Cable / Satellite DTA” has been added to differentiate basic Digital Transport Adaptors from more full-featured STBs
- Revised Operational Mode definitions to be consistent with recent ENERGY STAR updates

ENERGY STAR Data Analysis

- Analyzed current STB Qualified Product list data (42 products) & conducted independent testing
- Identified opportunities to selectively revise base-type and additional-functionality TEC allowances

ENERGY STAR Data Analysis

Base Type	ENERGY STAR QP List	Vendor Submitted Data	Supplemental Testing	TOTAL
Cable	18	1	9	28
Satellite	11	0	5	16
IP	12	0	8	20
Cable / Satellite DTA	7	0	0	7
TOTAL	48	1	22	71

Version 3.0 Tier 1 Proposal

BASE FUNCTIONALITY	V2.0 Tier 1 (kWh/yr)	V2.0 Tier 2 (kWh/yr)	V3.0 Tier 1 (kWh/yr)
Cable	70	50	72
Satellite	88	56	72
DTA	70	50	35
IP	45	36	58
Terrestrial	27	22	22
Thin Client / Remote	27	22	22

ADDITIONAL FUNCTIONALITY	V2.0 Tier 1 (kWh/yr)	V2.0 Tier 2 (kWh/yr)	V3.0 Tier 1 (kWh/yr)
Additional Tuners	53	16	16
Additional Tuners OTA	14	8	8
Advanced Video Processing	18	12	0
DVR	60	32	45
High Definition	35	12	25
Removable Media Player	12	8	8
Removable Media Player / Recorder	23	10	10
Multi-room	44	25	25
CableCARD	15	TBD	15
DOCSIS	20	TBD	20
Home Network Interface	20	10	0

Version 3.0 Tier 1 Proposal

- Maintained previous Version 2.0 allowances for CableCARD and DOCSIS due to limited technology development
- Added Home Network Interface and Advanced Video Processing allowances to the base type allowance for Cable
- Increased allowances for DVR and HD output to allow a greater number of full-featured STBs to qualify

Version 3.0 Tier 1 Proposal

- Set the base allowance for Satellite to be equivalent to the base allowance for Cable
- Developed a base allowance for IP = 58 kWh/year using results from the ENERGY STAR supplemental data collection

- *Note: All "pre-market" 2010 STBs in the ENERGY STAR data set are capable of meeting the proposed Version 3.0 Tier 1 limits*

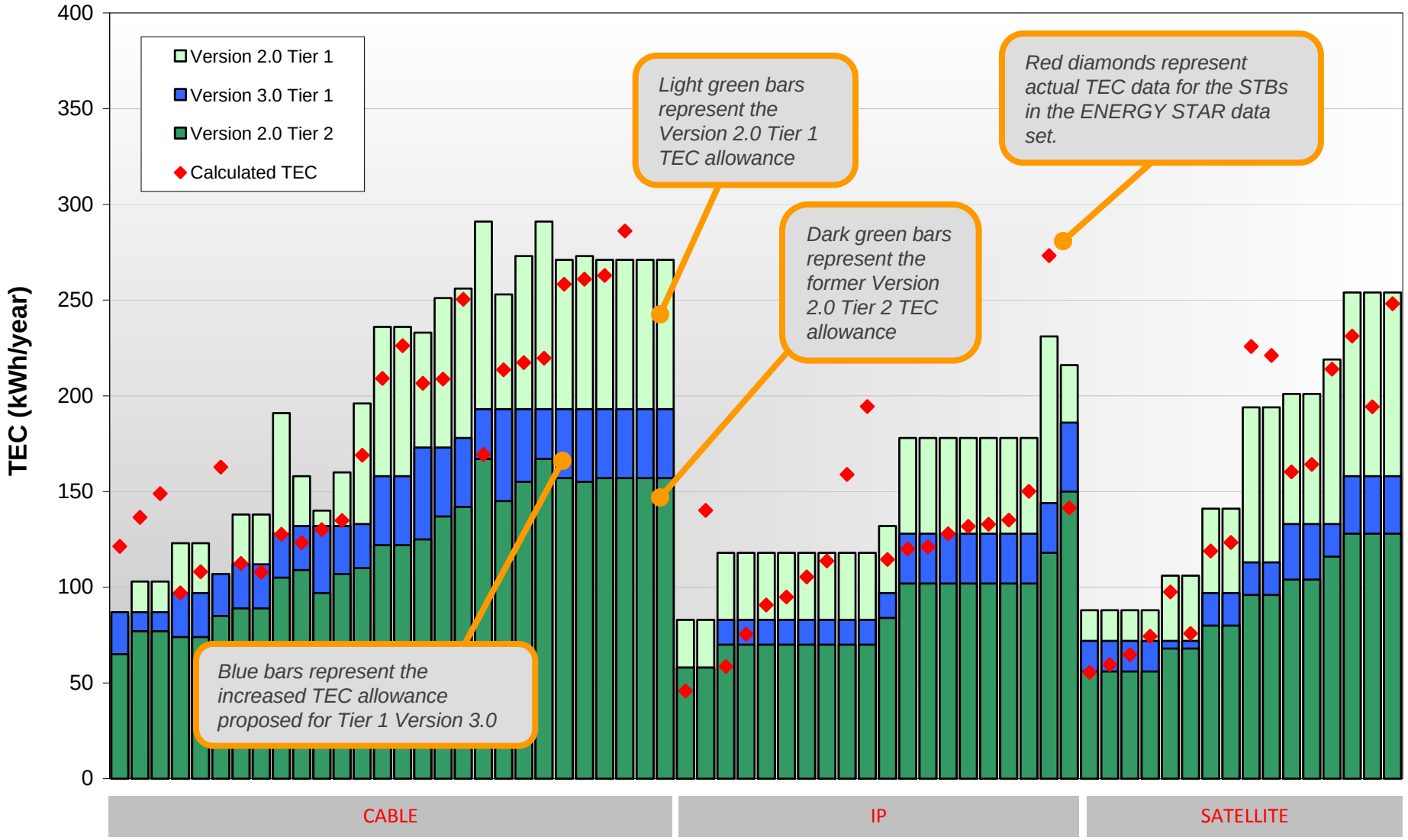
Version 3.0 Tier 1 Proposal

- Set the base allowance for Cable/Satellite DTA (Digital Transport Adapter) to allow the best available DTAs to qualify

This chart shows ESTAR qualification levels, as determined by product base type and feature set, from Version 2.0 and the new Version 3.0 Tier 1 proposal. Note that in most cases for Satellite and Cable STBs, the proposed Tier 1 Version 3.0 allowance is greater than those previously specified for Tier 2 Version 2.0.

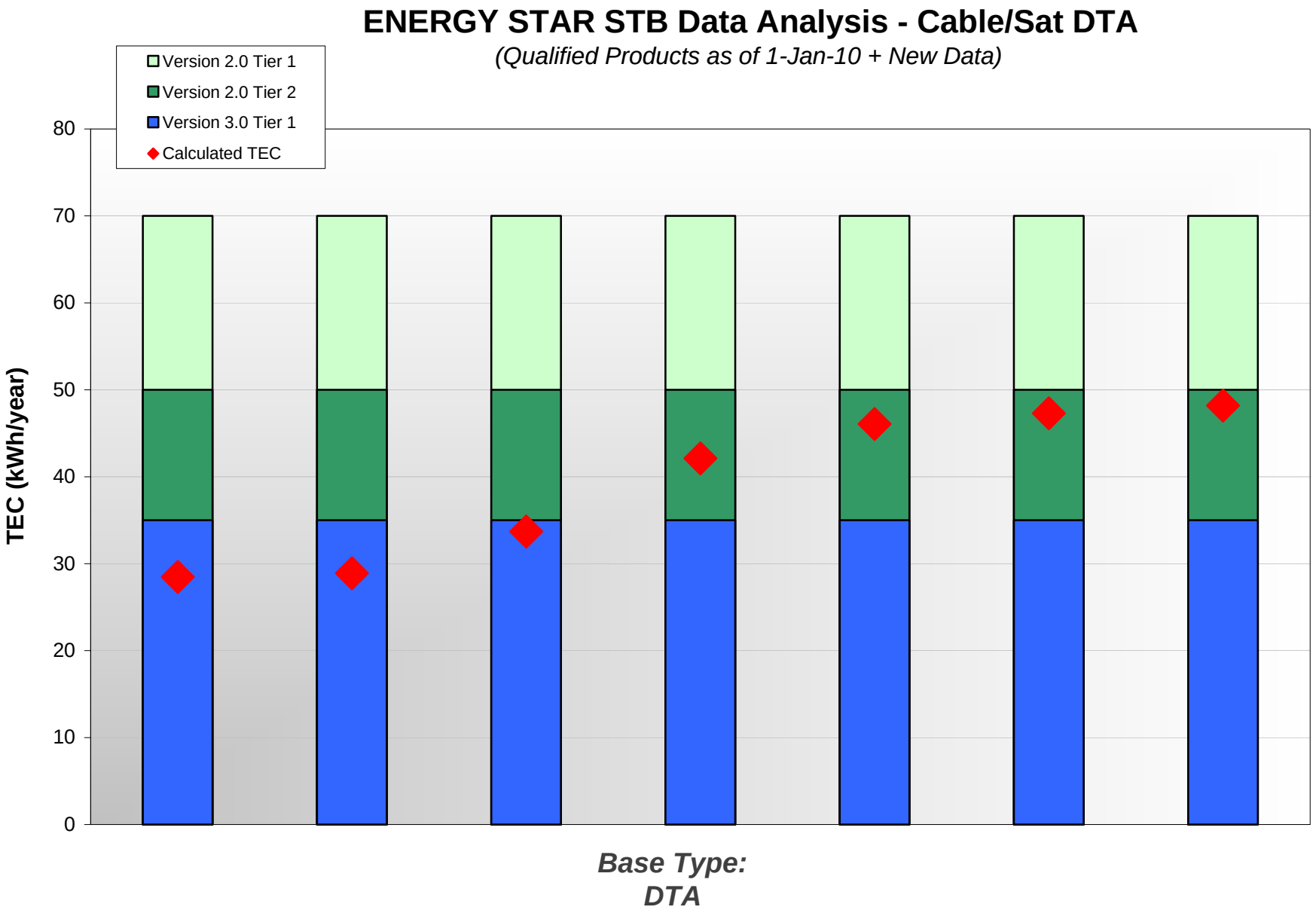
ENERGY STAR STB Data Analysis - CBL+SAT+IP

(Qualified Products as of 1-Jan-10 + New Data)



Sort Criteria: Version 3.0 Tier 1 Levels, Low to High, Grouped by Base Type. DTAs removed.

This chart shows ESTAR qualification levels, as determined by product base type and feature set, from Version 2.0 and the new Version 3.0 Tier 1 proposal. Note that for new Cable/Satellite DTA STBs, the proposed Tier 1 Version 3.0 allowance is less than that which was previously specified for Tier 2 Version 2.0.



Sort Criteria: DTA STBs only.

Lunch Presentation

Consortium for Energy Efficiency

Version 3.0 Tier 2 Proposal

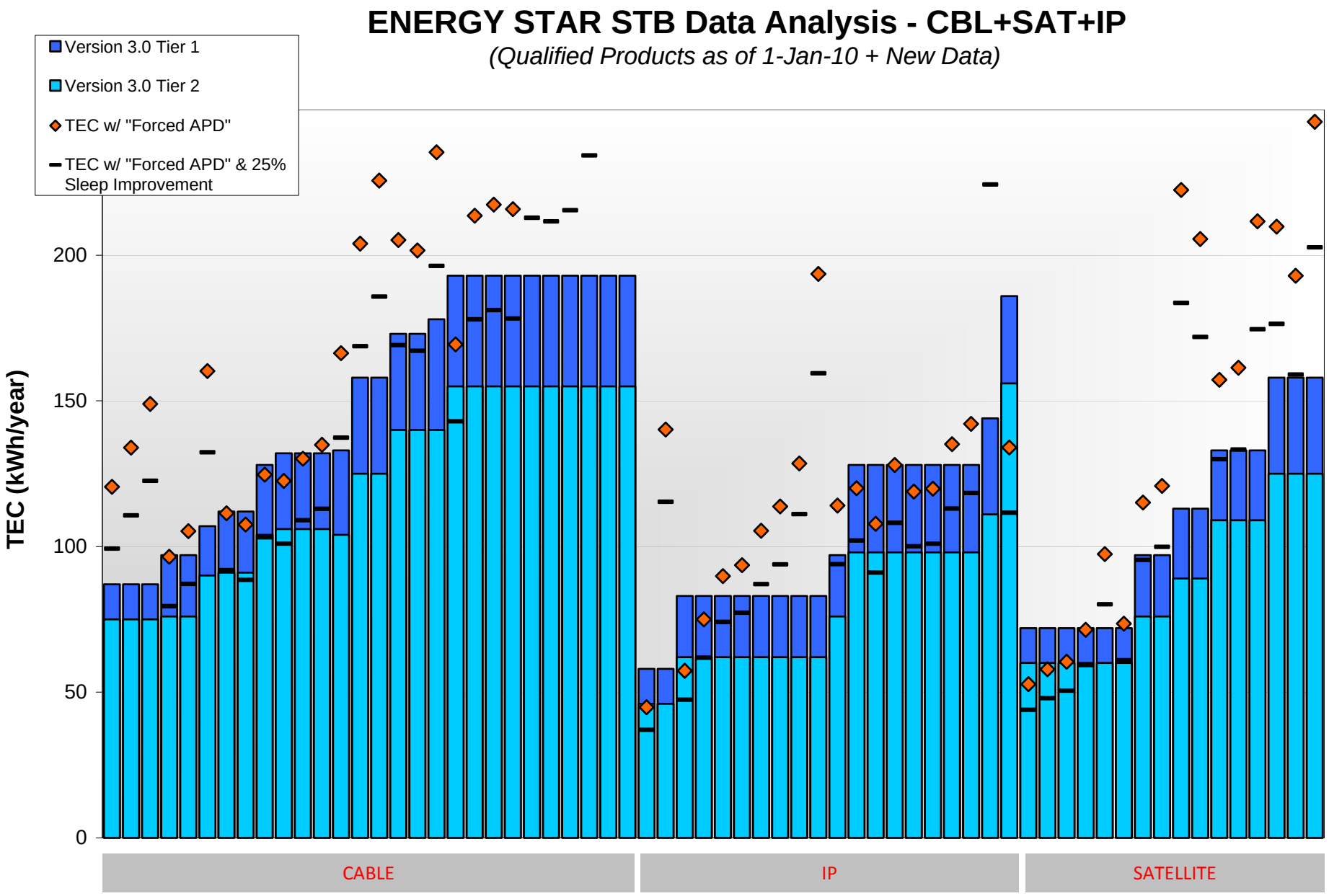
- EPA recognizes the continuing evolution of STB products and system architectures
- Objective is to reward products and systems which simultaneously deliver both high-quality user experience and best-in-class energy efficiency
- Efficiency targets reward intelligent component and subsystem power management and effective use of low-power operating states

Version 3.0 Tier 2 Proposal

BASE FUNCTIONALITY	V3.0 Tier 1 (kWh/yr)	V3.0 Tier 2 (kWh/yr)
Cable	72	60
Satellite	72	60
DTA	35	24
IP	58	46
Terrestrial	22	18
Thin Client / Remote	22	18

ADDITIONAL FUNCTIONALITY	V3.0 Tier 1 (kWh/yr)	V3.0 Tier 2 (kWh/yr)
Additional Tuners	16	13
Additional Tuners OTA	8	6
Advanced Video Processing	0	0
DVR	45	36
High Definition	25	16
Removable Media Player	8	8
Removable Media Player / Recorder	10	10
Multi-room	25	22
CableCARD	15	15
DOCSIS	20	15
Home Network Interface	0	0

This chart shows ESTAR qualification levels, as determined by product base type and feature set, from the new Version 3.0 Tier 1 and Tier 2 proposals. The orange diamonds represent TEC values derived from the ENERGY STAR data set, assuming APD was in use for each product. The black dashes represent the same values, given an additional 25% reduction in Sleep mode power consumption.



Version 3.0 Tier 2 Proposal

- Represents a refinement of the original Version 2.0 Tier 2 limits, including modifications to base type allowances to include AVP and Home Networking, and more lenient DVR and HD allowances
- Assume more widespread APD implementations and continued reductions in On and Sleep mode power consumption
- 5 products in the ENERGY STAR data set can meet proposed Tier 2 levels today, with no modifications

Manufacturer Partner Commitments

- Updated Partner Commitment language for STB manufacturers
  - Ensure appropriate marking of STBs
  - Pending enhanced testing requirements per broader ENERGY STAR programmatic changes

Next Steps for STBs

- Visit the STB Product Development Web site at www.energystar.gov/RevisedSpecs
- Send comments on Draft 1 and this presentation to STBs@energystar.gov by Tuesday, March 23
- EPA to distribute a written Version 3.0 Tier 2 proposal early next week for comment
- Contact ENERGY STAR with further questions or comments

Stakeholder Presentation

Natural Resources Defense Council

Overview of Service Provider Purchase/Fleet Requirements

- Meet or exceed either a purchase or fleet requirement for each year of partnership:
  - Purchase Requirement: 50% of new STBs purchased in a calendar year must be qualified
    - Refurbishment cannot be counted
    - Purchase requirement in 2011 and beyond is TBD
  - Fleet Requirement: 10% of fleet in 2009, 25% in 2010, and TBD% in 2011 and beyond must be qualified
    - The following may be counted toward the fleet requirement: newly-purchased qualified boxes put into homes, ENERGY STAR refurbished STBs put into homes, and STBs upgraded in the field to meet ENERGY STAR

How Has Partnership with SPs Contributed to Program Success?

- Service Providers have the opportunity to:
  - Specify energy-efficient STBs, influencing manufacturers and application vendors
  - Configure STBs to deliver on energy efficiency promises
  - Refurbish STBs deployed to customers
  - Control the network and network protocol definitions through CableLabs
  - Provide purchase and deployment data to EPA
  - Educate subscribers about energy efficiency

Challenges with the Current SP Partnership Structure

- High entry threshold
- Difficult for SP to partner mid-year
- SP partners make a commitment to future activity
  - Some may delay joining until they're certain of purchase/fleet percentages
- Manufacturing partners want to label all STBs that meet technical requirements, regardless of the SP partner status

What's Next for Service Providers?

- Discussion today of other successes & barriers
- First draft SP requirements distributed in April
- Final SP requirements distributed in May

Open Discussion

Comments?

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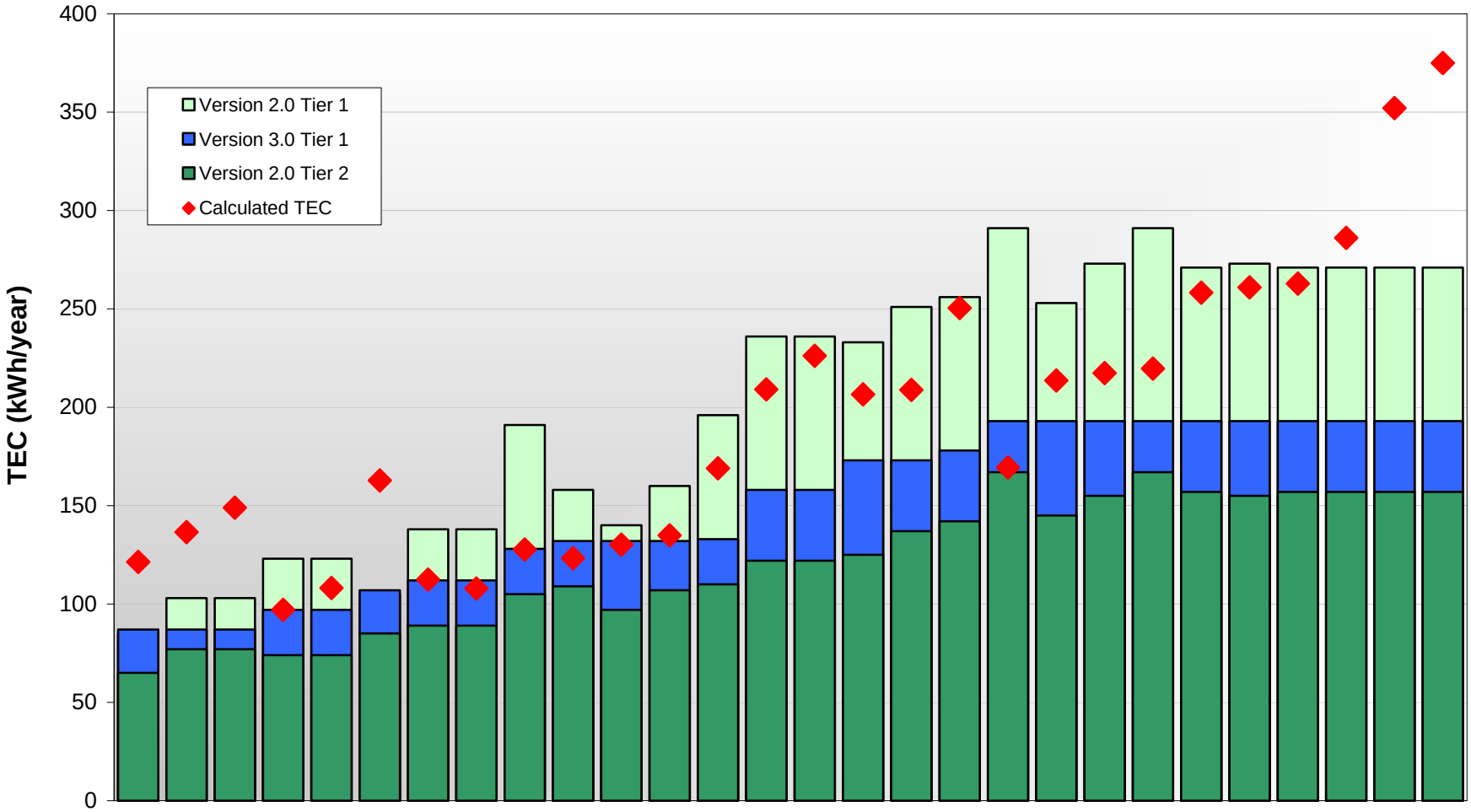
Backup Slides

ENERGY STAR
Data Set

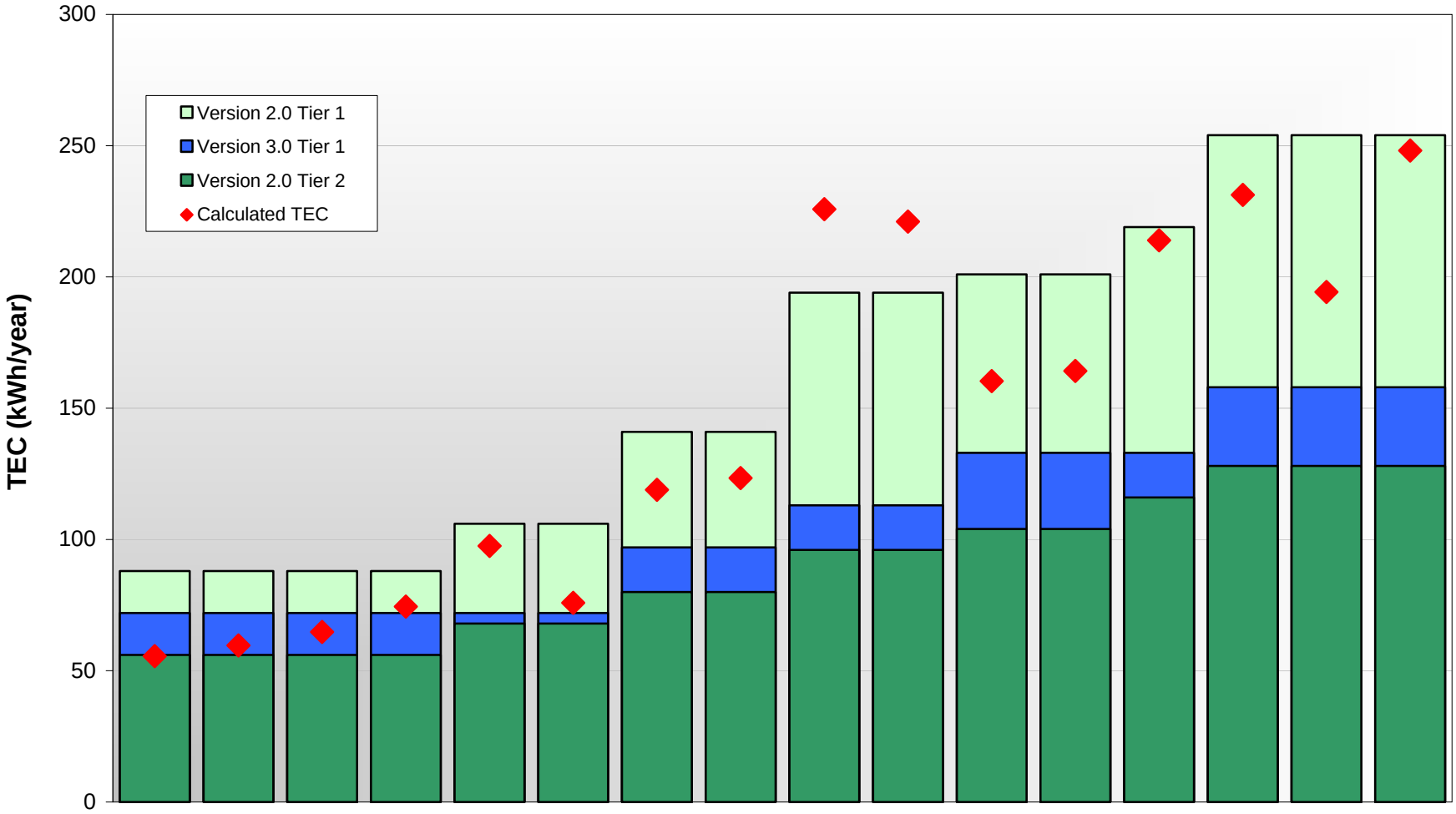
ENERGY STAR STB Data Analysis - CABLE

(Qualified Products as of 1-Jan-10 + New Data)



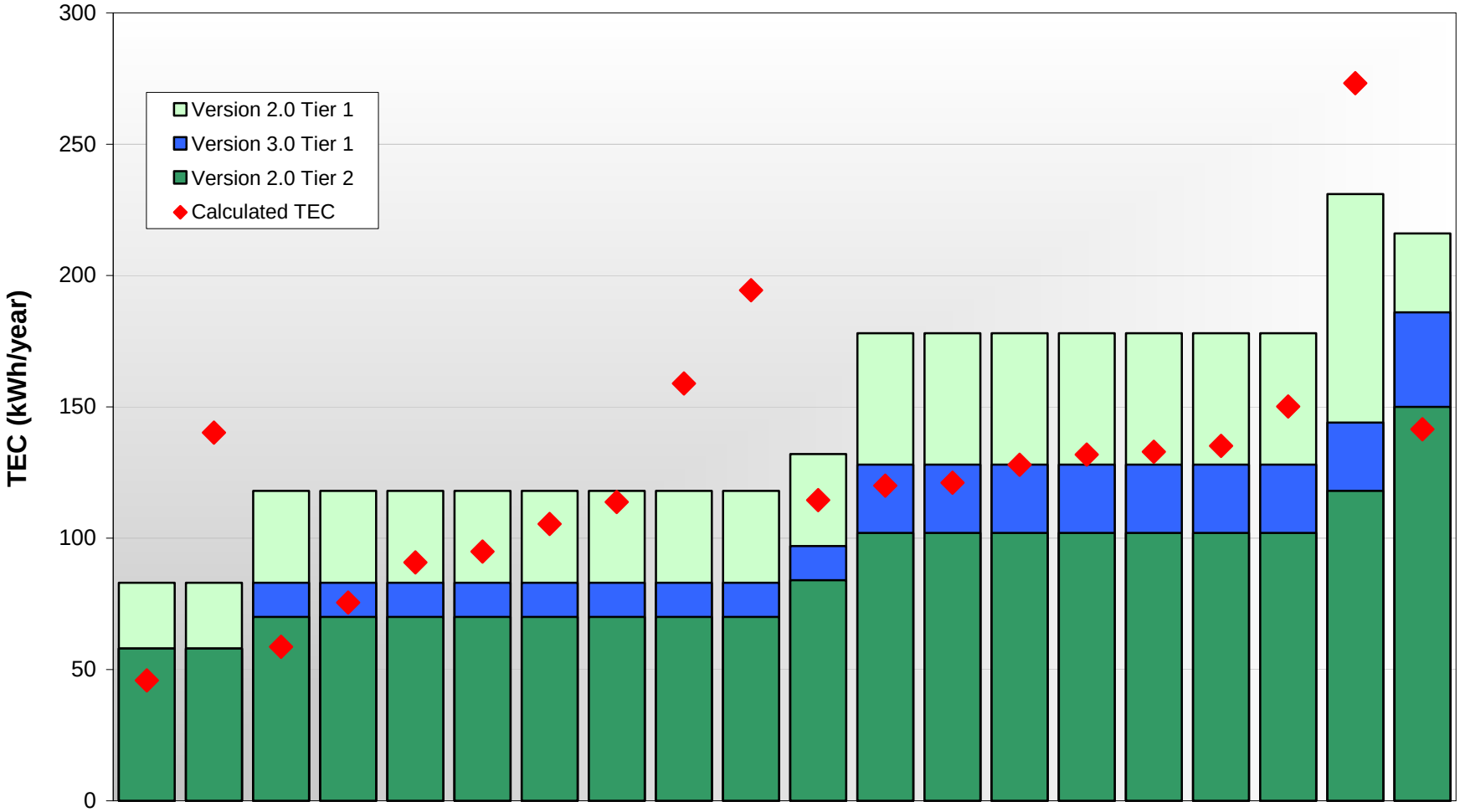
ENERGY STAR STB Data Analysis - SATELLITE

(Qualified Products as of 1-Jan-10 + New Data)



ENERGY STAR STB Data Analysis - IP

(Qualified Products as of 1-Jan-10 + New Data)



ENERGY STAR STB Data Analysis - Cable/Sat DTA

(Qualified Products as of 1-Jan-10 + New Data)