VSD Fan Motor Size Threshold

Current Requirement

- In VAV fan systems with total > 25 hp, individual fan motors >25hp shall have:
  - VSD,
  - Axial vanes with variable pitch, or
  - <30% power at 50% airflow.

Proposed Change

- Reduce motor size threshold to 10 hp or larger
- Requirement applies regardless of total system fan hp

Costs

Motor Size	Constant Volume (1)	Discharge Damper (2)	Inlet Vanes (3)	VSD (4)
1 hp	$700	$850	$925	$2,769
2 hp	$700	$875	$963	$2,769
3 hp	$700	$900	$1,000	$2,769
5 hp	$700	$1,020	$1,180	$2,769
7.5 hp	$720	$1,070	$1,245	$3,786
10 hp	$720	$1,120	$1,320	$3,786
15 hp	$1,000	$1,420	$1,630	$4,407
20 hp	$1,000	$1,450	$1,675	$5,961
25 hp	$1,000	$1,500	$1,750	$6,865

(1) Cost for starter and NEMA 1 enclosure (Means cost data)
(2) Cost for (1) plus discharge outlet damper and actuator motor (Means cost data)
(3) Cost for (1) plus inlet vane damper and actuator motor (1.5 x Discharge Damper cost)
(4) Variable speed drive and NEMA 1 enclosure (Means cost data)

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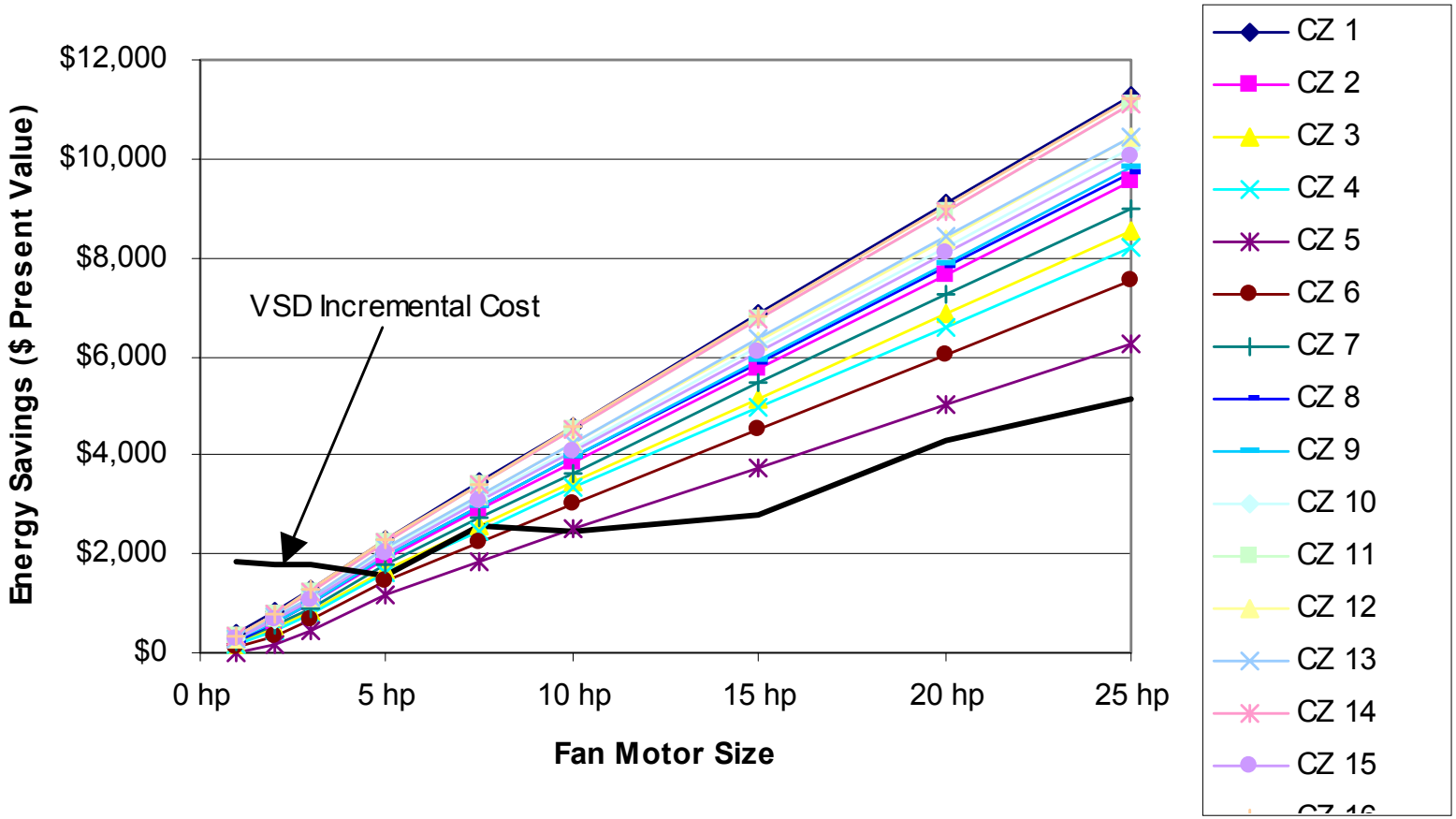
Energy Savings vs. Cost



VSD vs. Inlet Vanes
Low-rise Building

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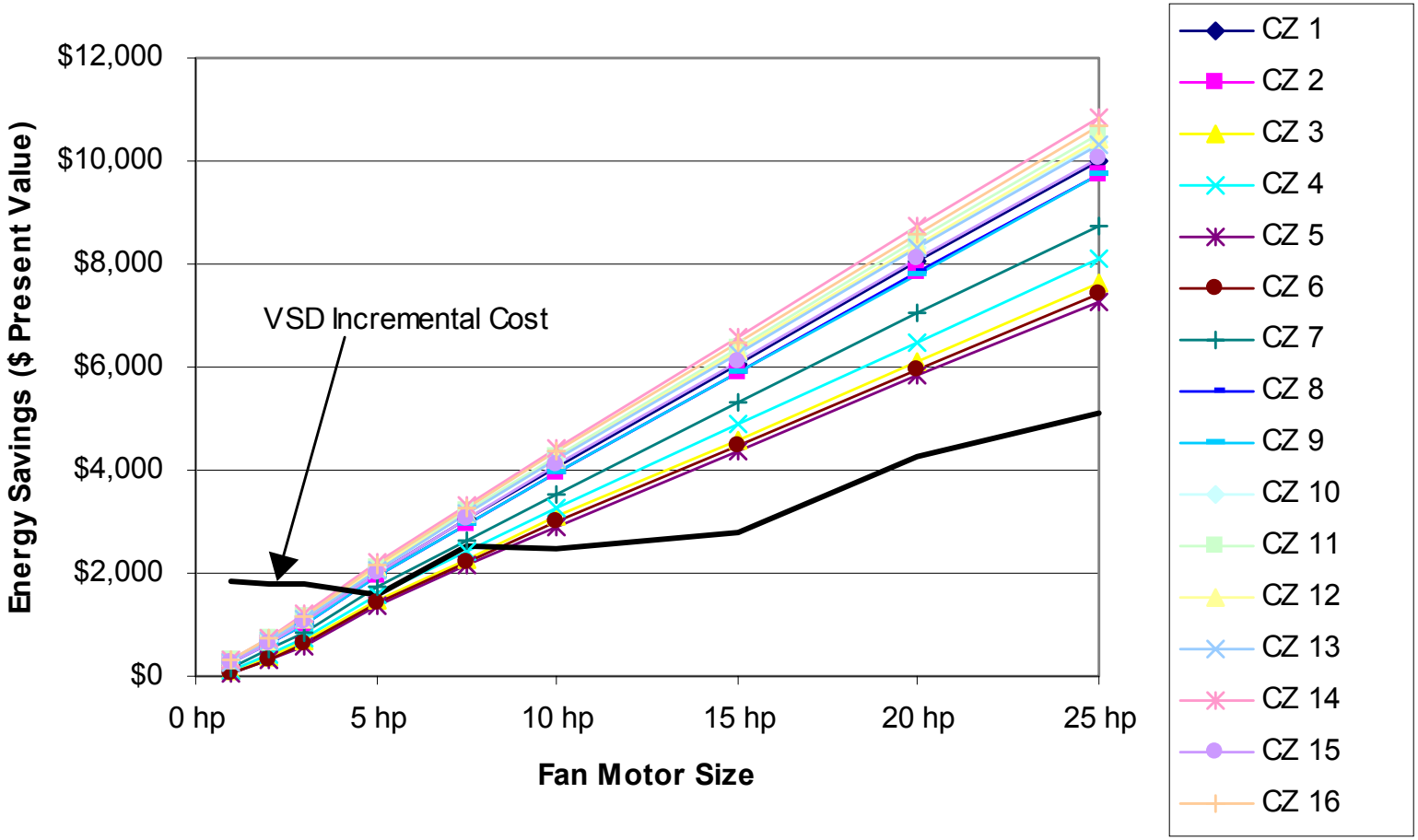
VSD Size Threshold

California Energy Efficiency Standards 2005



VSD vs. Inlet Vanes
High-rise Building

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