EXHIBIT NO. _____ (WAG-5)
DOCKET NO._____
2003 POWER COST ONLY RATE CASE
WITNESS: WILLIAM A. GAINES

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. PUGET SOUND ENERGY, INC., Respondent.	Docket No. _____

DIRECT TESTIMONY OF WILLIAM A. GAINES ON BEHALF OF PUGET SOUND ENERGY, INC.

Overview of PSE Loads and Resources 2001-2010

August 26, 2002

Contents

- Load Forecast
- Resource Losses
- Load Resource Balance
  - Critical Water
  - Monthly On-Off Peak
- Regional Picture
- Transmission Issues
- Alternative Strategies

Load Forecast Assumptions

- On peak/off peak average demand for 2001-2010 based on Villamor's forecast from the General Rate Case.

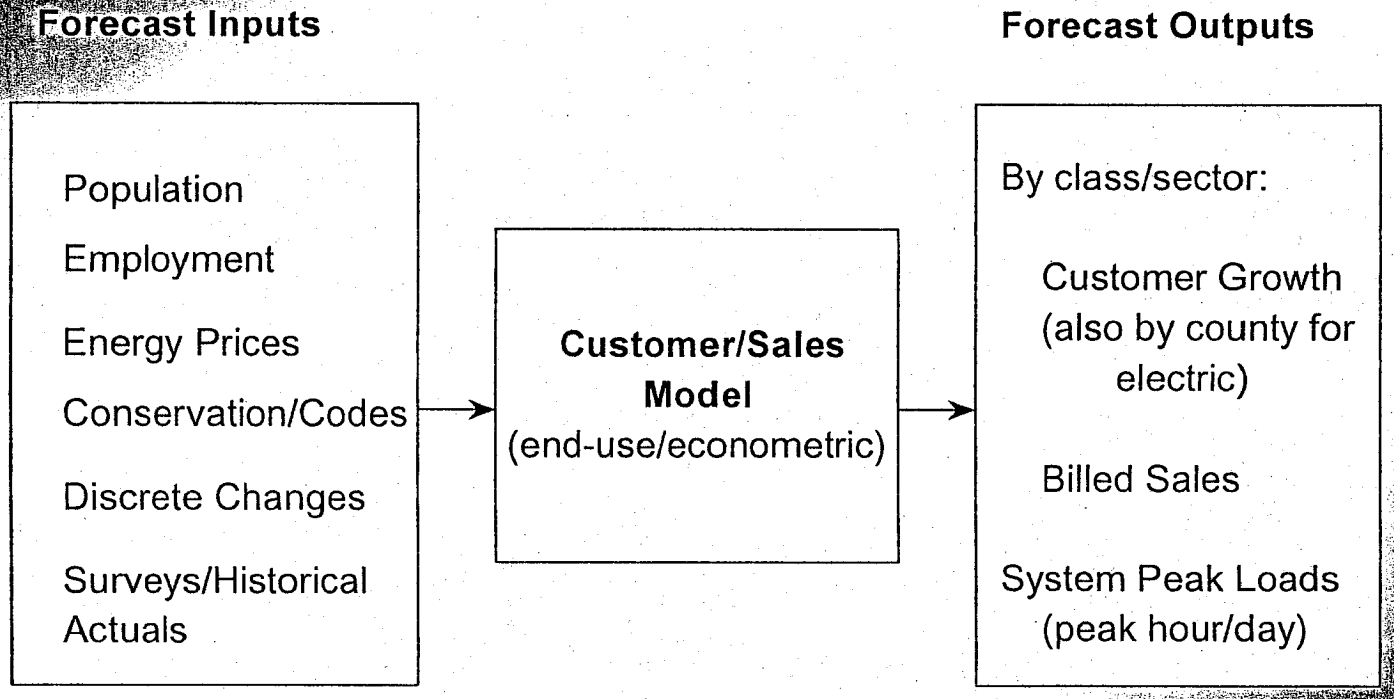
Sales Forecast Summary

Electric

- Electric sales from fixed rate schedules is expected to slightly decline by -0.4% in 2002 (-82 GWHs) including ISPs (-0.6% or -108 GWHs without ISPs), while customers are expected to increase by 1.5% or 14,341 customers over 2000.

- 8 year forecast is 1.9% average annual sales growth with ISPs, or 1.7% without ISPs.

Forecast Model Overview



Key Drivers

Use per Customer = f(Weather, Prices, Economic/Demographic Variables)

Customer Counts = f(Prices, Economic/Demographic Variables)

Where prices or economic/demographic variables could enter as polynomial distributed lag variables

Estimated Price Elasticities:
Electric: Residential = -.18; Commercial = -.33;
Industrial = -.46

Resource Forecast Assumptions

- Forecasted on peak/off peak average energy based on information considered for the rate case.
- Colstrip: energy = capacity x forced outage rate (seven year average). Maintenance schedule based on last three years.
- PSE Hydro based on 30 year average.
- Mid-C hydro based on NWPP 60 year average.
- QF Hydro based on average annual energy.
- PSE CTs: = 4% forced outage rate.
- PG&E Seasonal Exchange terminated 12/31/2006.

Significant Loss of Contract Resources

- PSE's percentage of Rock Island II declined by 5% in 2000 and will further decline annually to a maximum aggregate reduction of 50%.
- By the end of 2003, PSE will lose 265 MW capacity; 160 aMW.
- At the end of 2006, PSE will lose 300 MW winter capacity due to termination of PG&E exchange.
- By the end of 2010, PSE will lose 107 MW capacity; 94 aMW.
- *Note:* At the end of 2011, contracts expire for March Point I, March Point II, and Tenaska - 385 MW capacity; 357 aMW.

Significant Loss of Contract Resources

Expiring Resources	Capacity MW	Energy aMW	Resource Type	Expiration
Avista	33	25	Thermal	12/31/2002
CSPE	20	19	Hydro	3/31/2003
Supplemental & Entitlement Capacity	10	0	Hydro	3/31/2003
PacifiCorp	200	120	Thermal	10/31/2003
Port Townsend Paper	0.4	0.3	Hydro-QF	12/31/2003
Powerex/Pt.Roberts	8	3	Hydro	9/30/2004
Hutchison Creek	0.9	0.2	Hydro-QF	9/30/2004
Baker Replacement	7	1	Hydro	9/30/2006
PG&E Seasonal Exchange-PSE	300	0	Thermal	12/31/2006
Puyallup Energy Recovery Co.(PERC)	2	1.8	Biomass-QF	4/15/2009
Conservation Credit - SnoPUD	10	10	Hydro	2/28/2010
Montana Power	97	84	Colstrip	12/29/2010

Significant Loss of Contract Resources

Expiring Resources Annualized										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Cumulative Total
(aMW) Energy	25	139.3	3.2	0	1	0	0	1.8	94	264.3
(MW) Capacity	33	230.4	8.9	0	307	0	0	2	107	688.3

Significant Loss of Contract Resources

Expiring Resources 2011-2022				
	Capacity	Energy	Resource	Expiration
	MW	aMW	Type	
Chelan - Rocky Reach	505.3	275.2	Hydro	11/1/2011
Spokane Municipal Solid Waste	22.9	16.2	Biomass-QF	11/1/2011
March Point Phase I & II	140.0	140.0	Thermal-QF	12/31/2011
Tenaska	245.0	217.0	Thermal-QF	12/31/2011
Chelan - Rock Island I & II	299.0	182.1	Hydro	6/7/2012
North Wasco	5.0	4.8	Hydro-QF	12/31/2012
Sumas	123.0	123.0	Thermal-QF	12/31/2012
Kingdom Energy- Sygitowicz	0.4	0.4	Hydro-QF	2/2/2014
Douglas - Wells	262.9	143.5	Hydro	8/31/2018
BPA- WNP-3 Exchange	50.0	42.5	Various	6/30/2017
Weeks Falls	4.6	1.2	Hydro	12/31/2022
	1658.1	1145.9		

Load/Resource Balance

- PSE is deficit for 2002-2010 on peak if CTs are not assumed.
- By the end of 2006, the deficit for on peak increases to approximately 500 MW if CTs are not assumed.
- Based on PIRA's 2002-2005 price forecast of $3.24 per MMBtu and $31.50 per MW for gas and on peak electric, PSE's CTs would not clear the market.

[Source: PIRA Oct 2001, Table VIII-30; U.S. Electricity Prices, On Peak 1998-2015; North American Gas Prices 1990-2015]

Load/Resource Balance - Without CTs

Surplus/Deficit (-) (aMW)						
	On Peak			*Off Peak*		
Year	Load	Resources	Surplus (Deficit)	Load	Resources	Surplus (Deficit)
2002	2587	2478	-109	2025	2062	37
2003	2623	2481	-142	2058	2127	69
2004	2611	2306	-305	2049	2105	56
2005	2680	2296	-384	2102	2080	-22
2006	2735	2264	-471	2145	2043	-102
2007	2789	2254	-535	2185	2032	-153
2008	2851	2246	-605	2193	2027	-166
2009	2912	2247	-665	2253	2028	-225
2010	2974	2239	-735	2300	2020	-280

Load/Resource Balance - With CTs (588 MW)

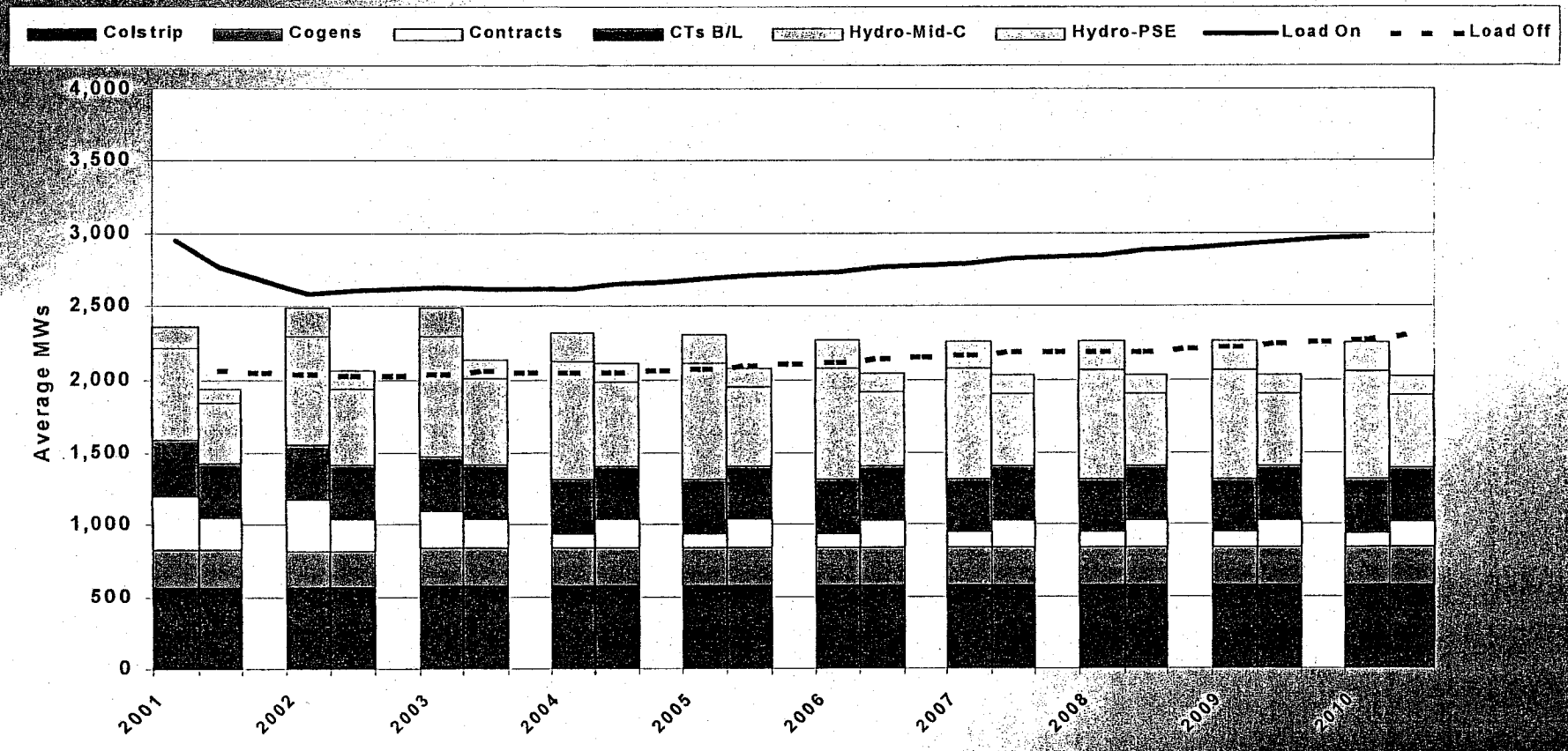
Surplus/Deficit (-) (aMW)						
	On Peak			*Off Peak*		
Year	Load	Resources	Surplus (Deficit)	Load	Resources	Surplus (Deficit)
2002	2587	3066	479	2025	2650	625
2003	2623	3069	446	2058	2715	657
2004	2611	2894	283	2049	2693	644
2005	2680	2884	204	2102	2668	566
2006	2735	2852	117	2145	2631	486
2007	2789	2842	53	2185	2620	435
2008	2851	2834	-17	2193	2615	422
2009	2912	2835	-77	2253	2616	363
2010	2974	2827	-147	2300	2608	308

Load Resource Balance - Resource Key

- Colstrip: Colstrip 1&2, Colstrip 3&4
- Cogens: March Point Phase I, Phase II, Sumas
- Contracts:
  - Other: BC Hydro-Pt. Roberts, Baker Replacement, CSPE, Canadian Entitlement & Extension, Snohomish Conservation, North WASCO, Montana Power, Pacificorp, PERC, PG&E Exchange, WWP, WNP3 Exchange
  - QF's: Hutchinson Creek, Kingdom Energy-Sygitowicz, Koma Kulshan, Port Townsend Paper, Spokane, Twin Falls, Weeks Falls
- CTs - Baseload: Encogen, Tenaska
- Hydro:
  - Mid C: Wells, Rocky Reach, Rock Island I, Rock Island II, Wanapum, Priest Rapids
  - PSE: Baker (Upper/Lower), White River, Snoqualmie Falls, Electron
- CTs - Peaking: Frederickson, Fredonia, Whitehorn, Crystal Mountain

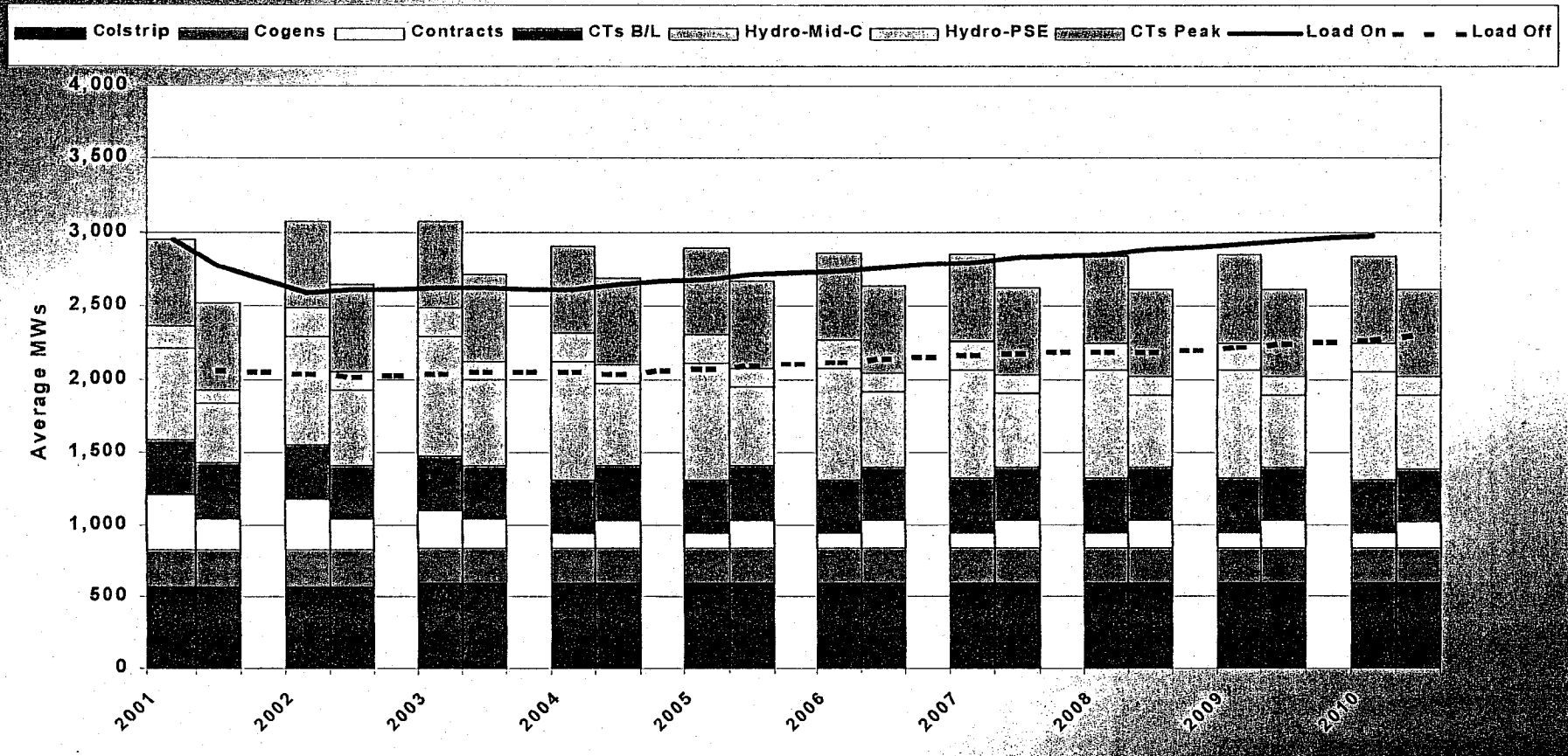
Load/Resource Balance - On Peak/Off Peak 2001-2010

Without CTs - average water



Load/Resource Balance - On Peak/Off Peak 2001-2010

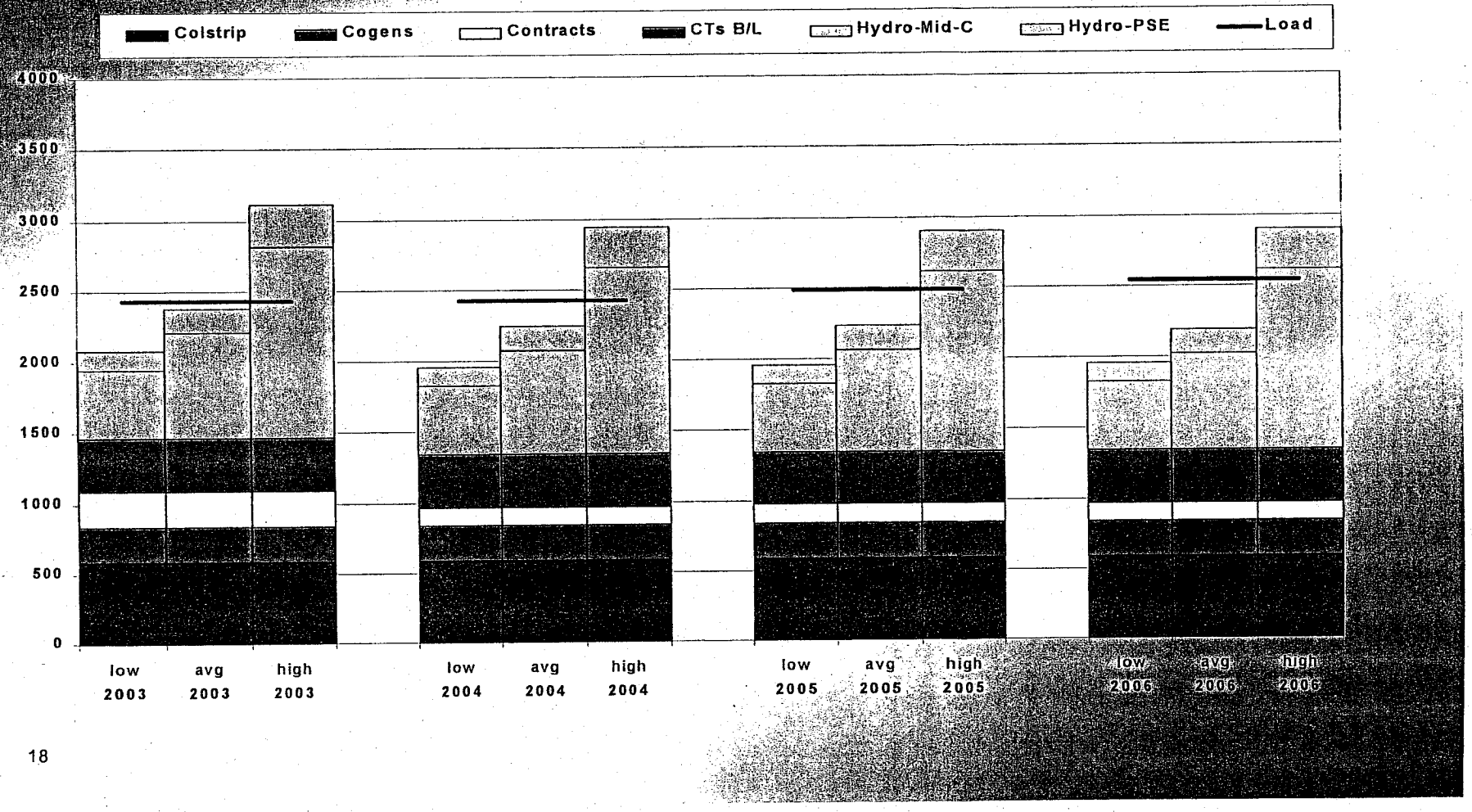
With CTs - average water



Load/Resource Balance - Water Sensitivity 2003-2006

Without CTs

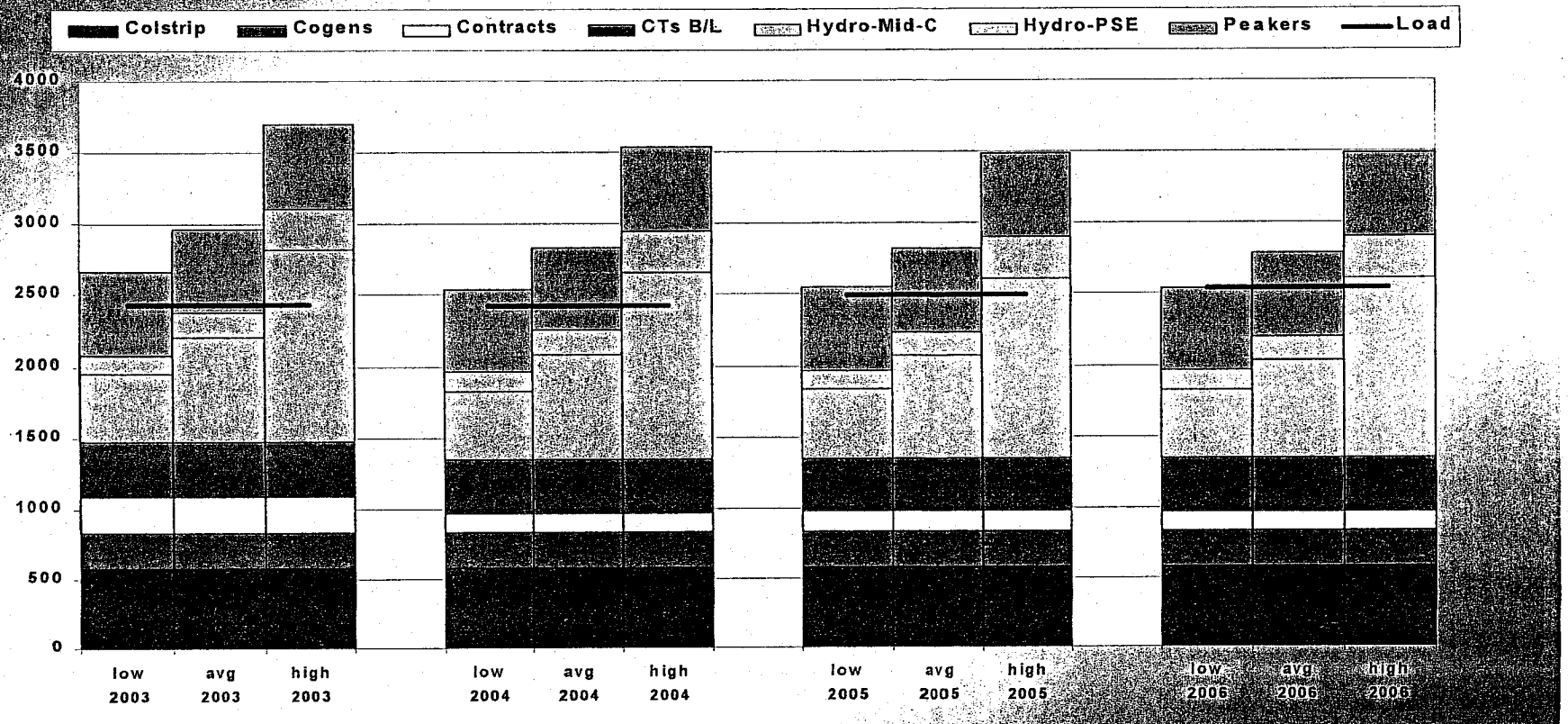
lower water is based on 2001



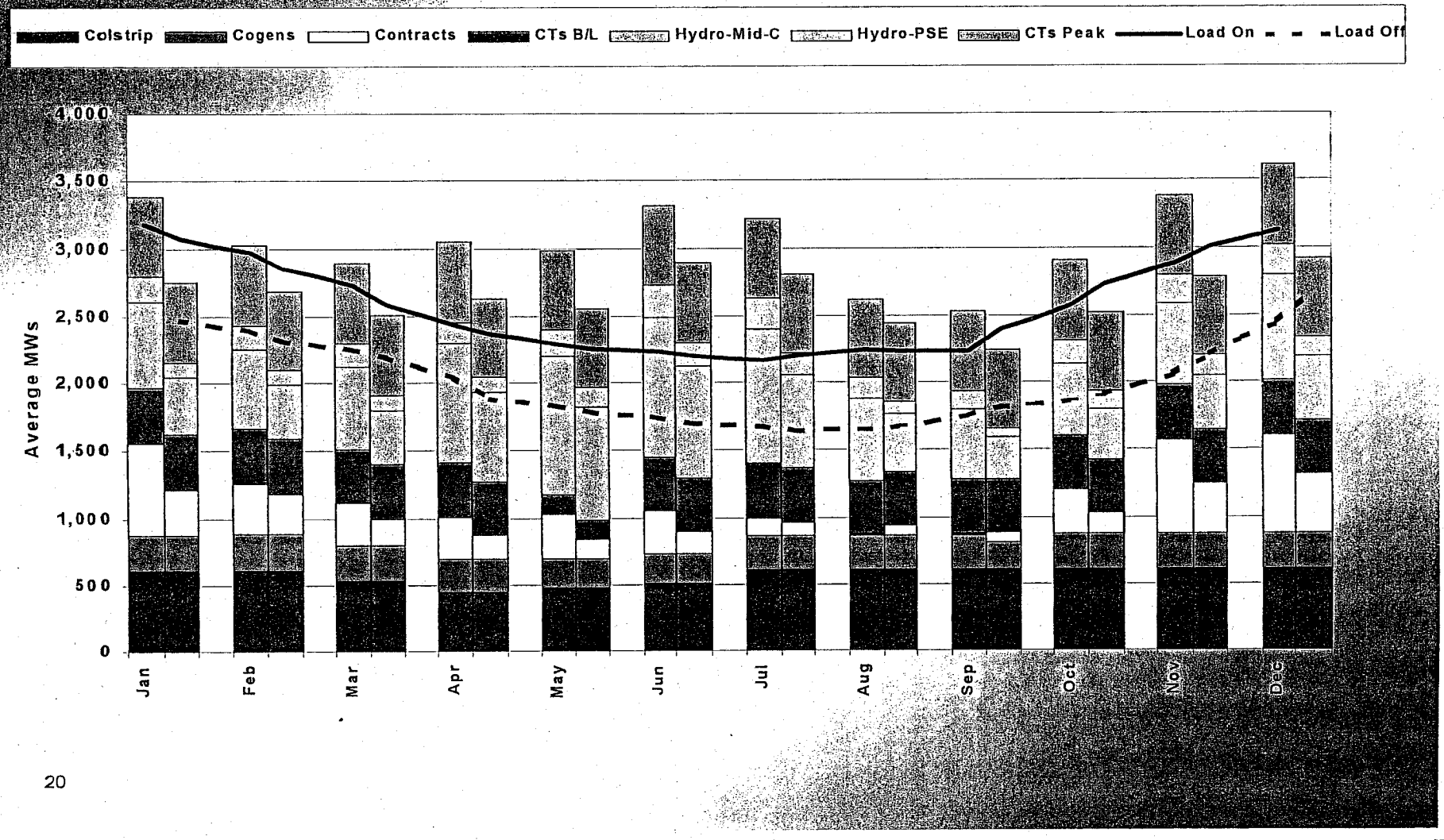
Load/Resource Balance - Water Sensitivity 2003-2006

With CTs

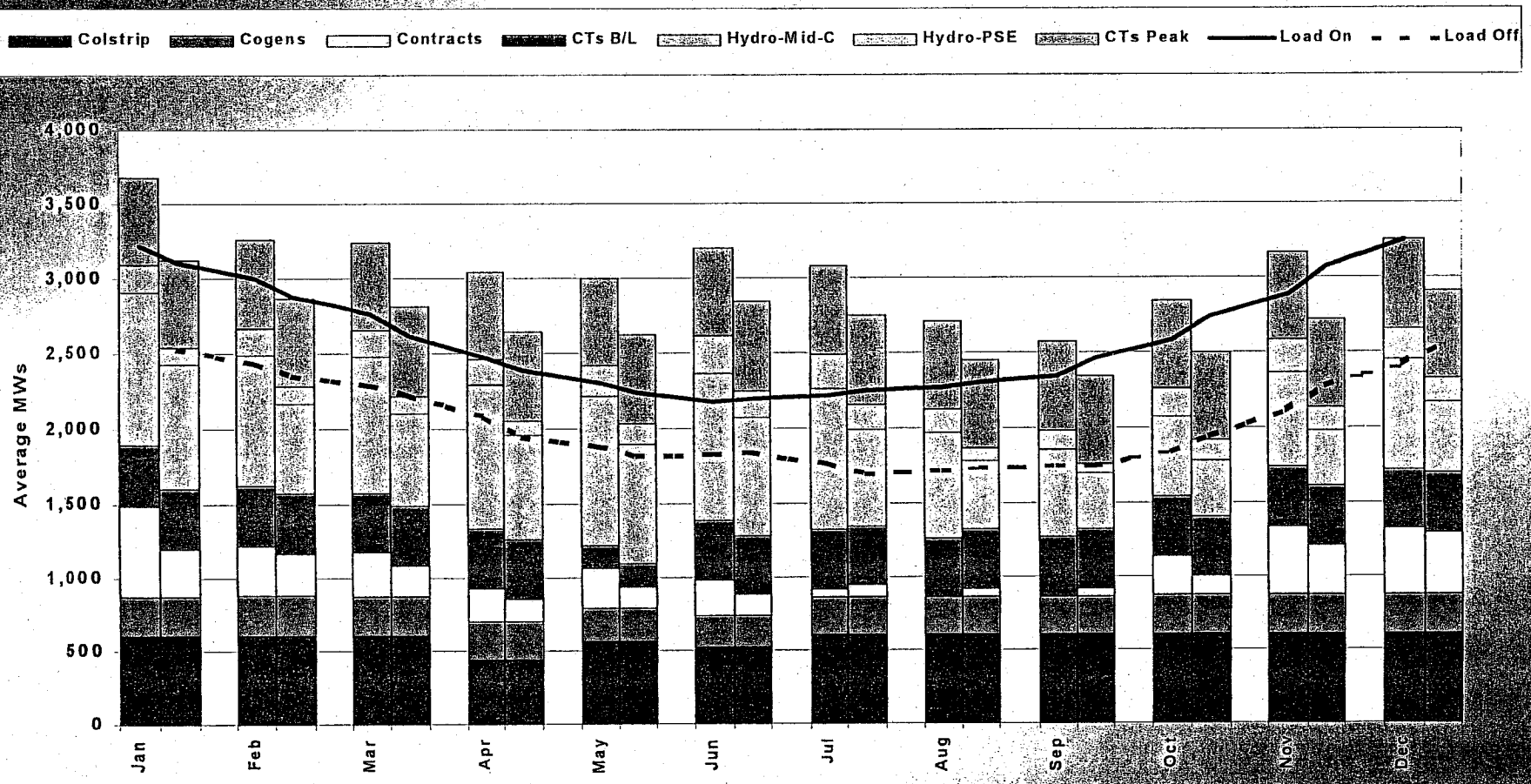
lower water is based on 2001



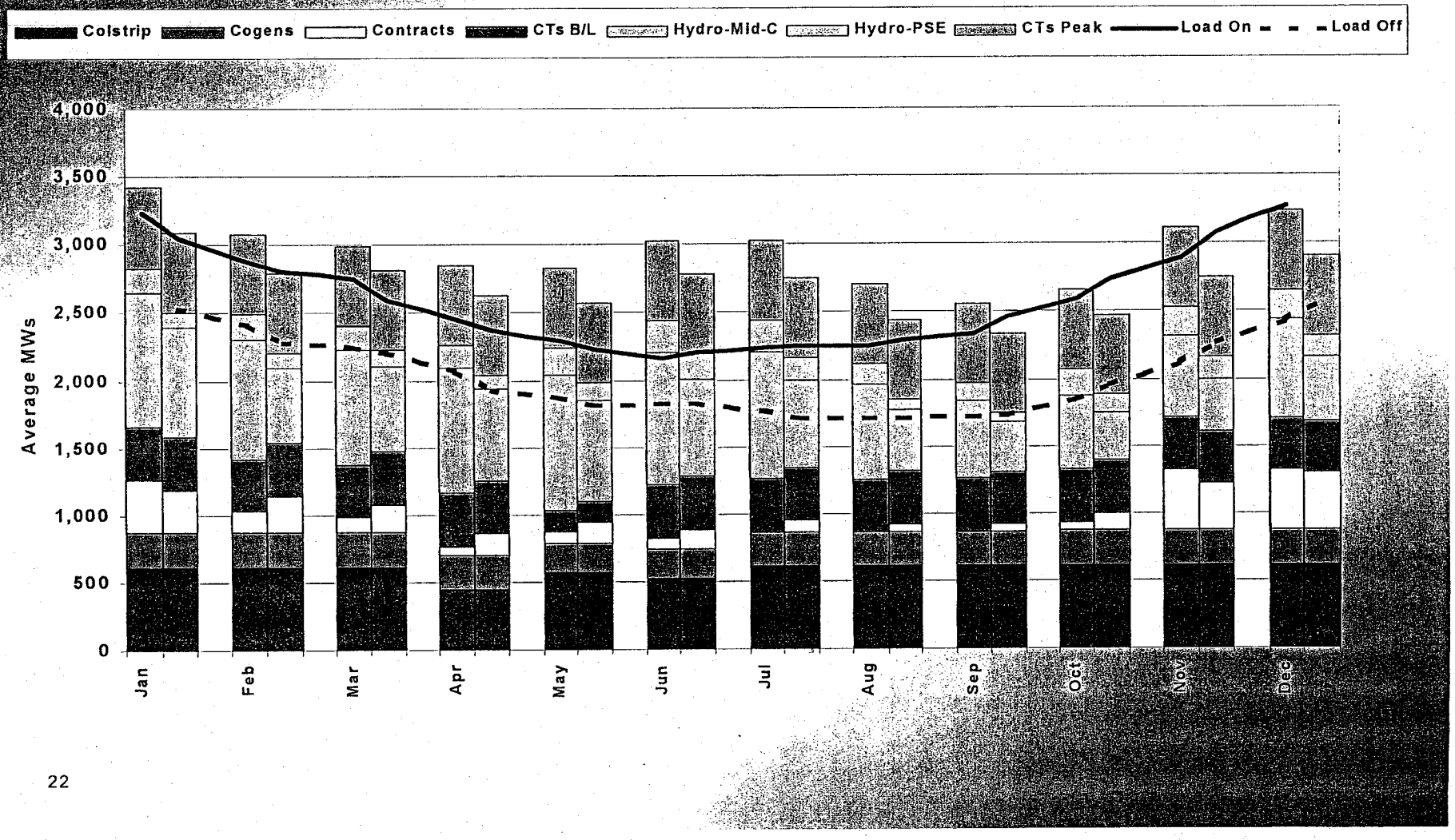
Load/Resource Balance - On Peak/Off Peak 2002



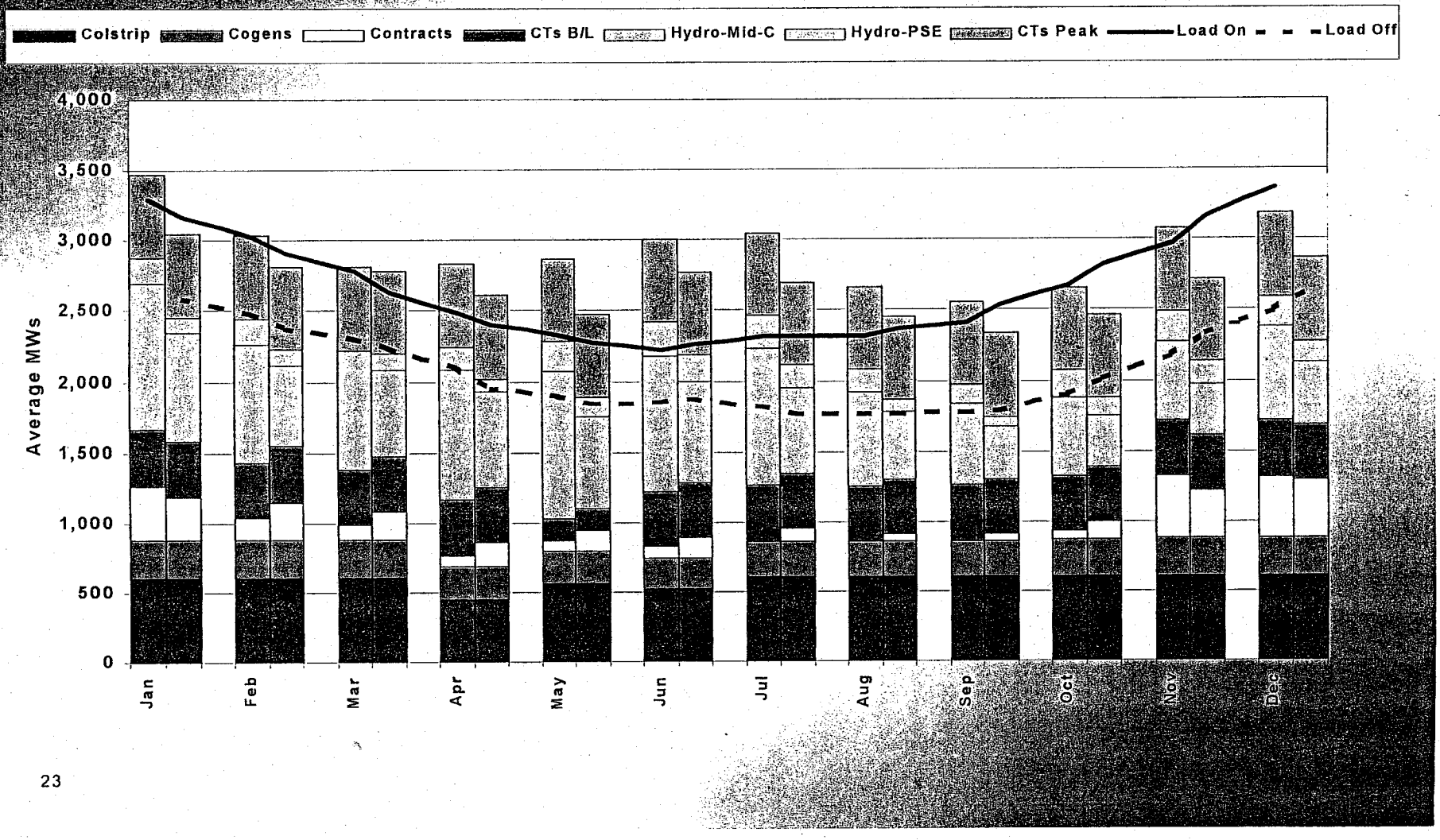
Load/Resource Balance - On Peak/Off Peak 2003



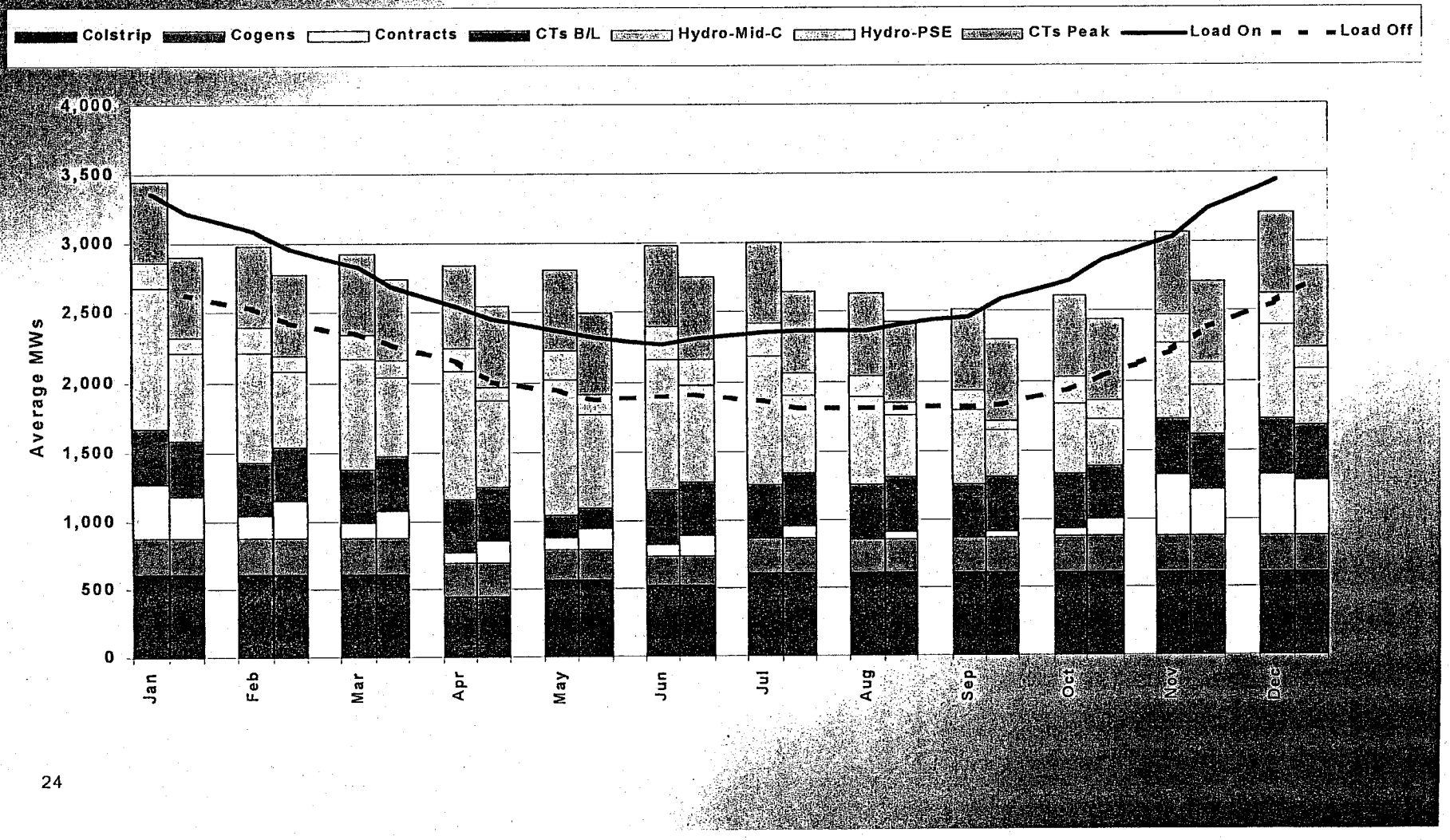
Load/Resource Balance - On Peak/Off Peak 2004



Load/Resource Balance - On Peak/Off Peak 2005



Load/Resource Balance - On Peak/Off Peak 2006



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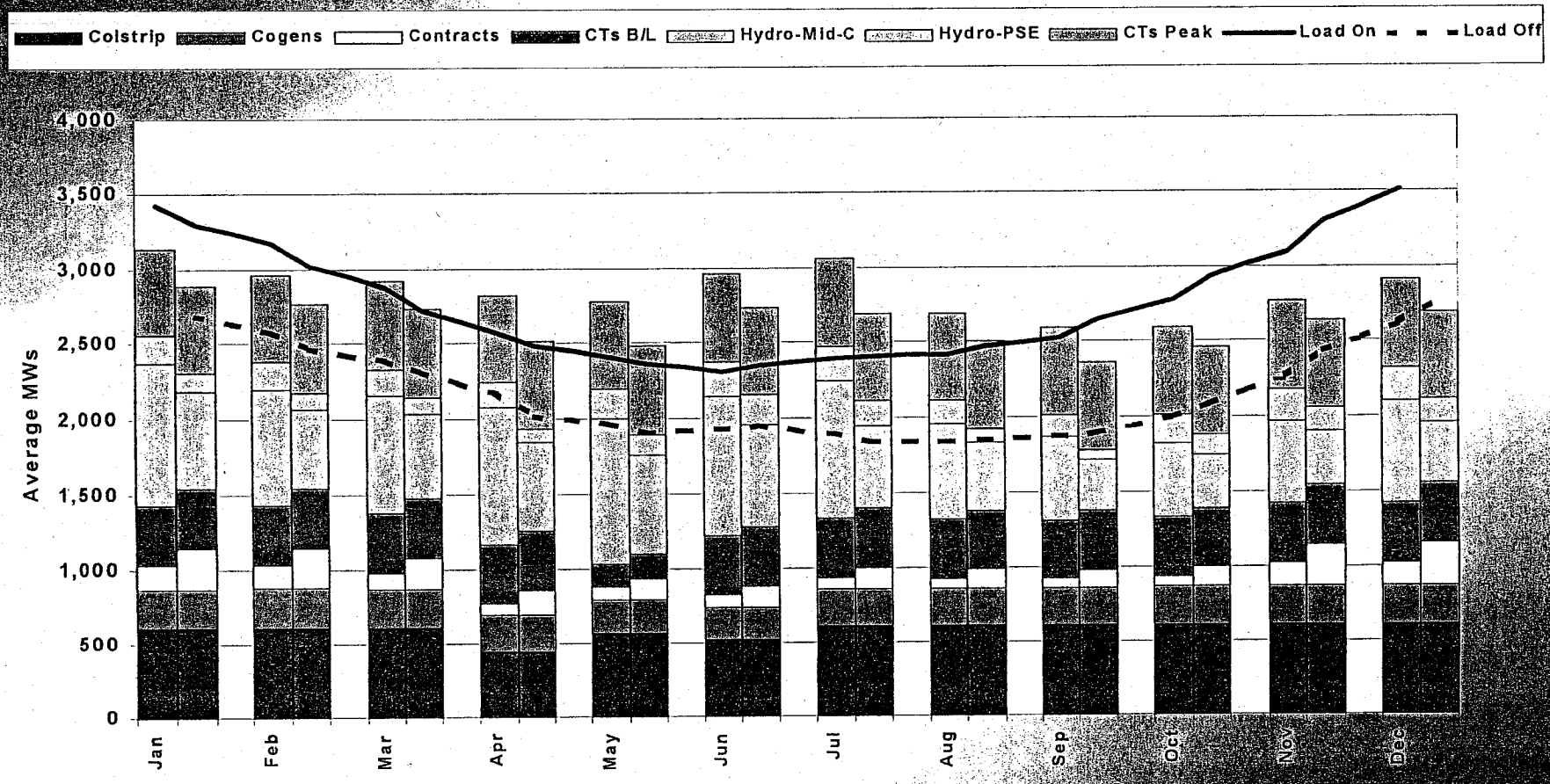
Load/Resource Balance - On Peak/Off Peak 2007



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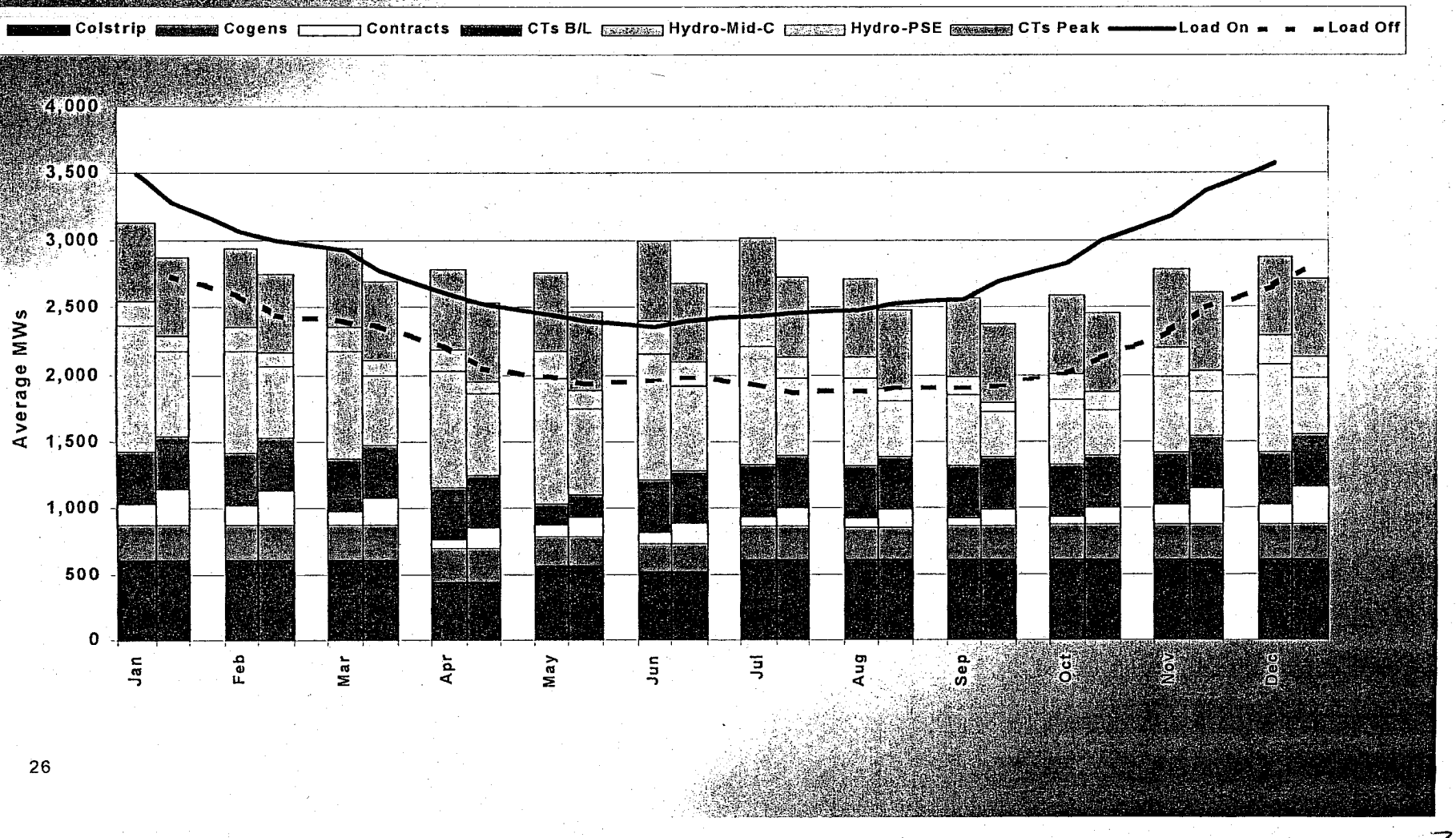
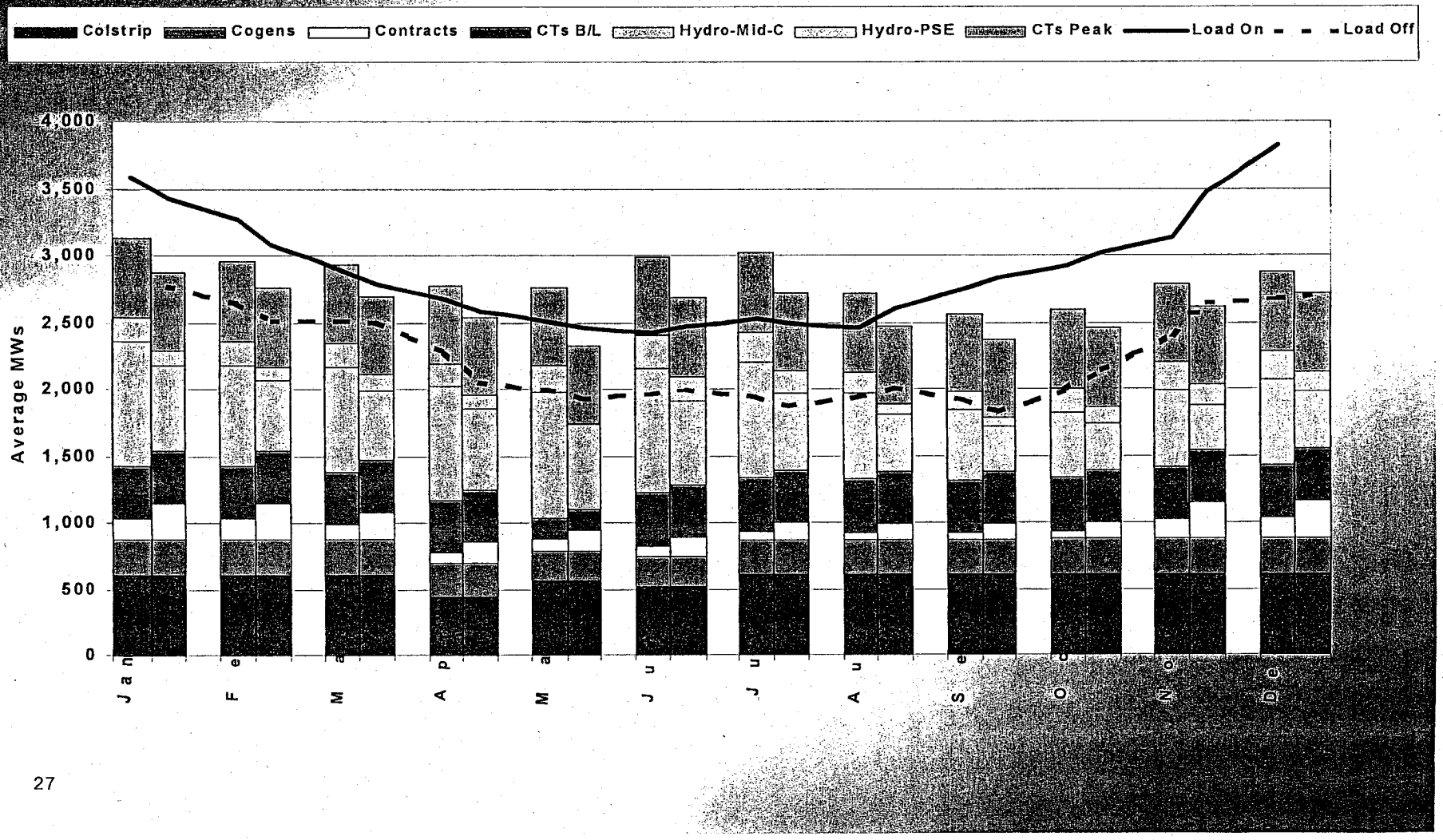
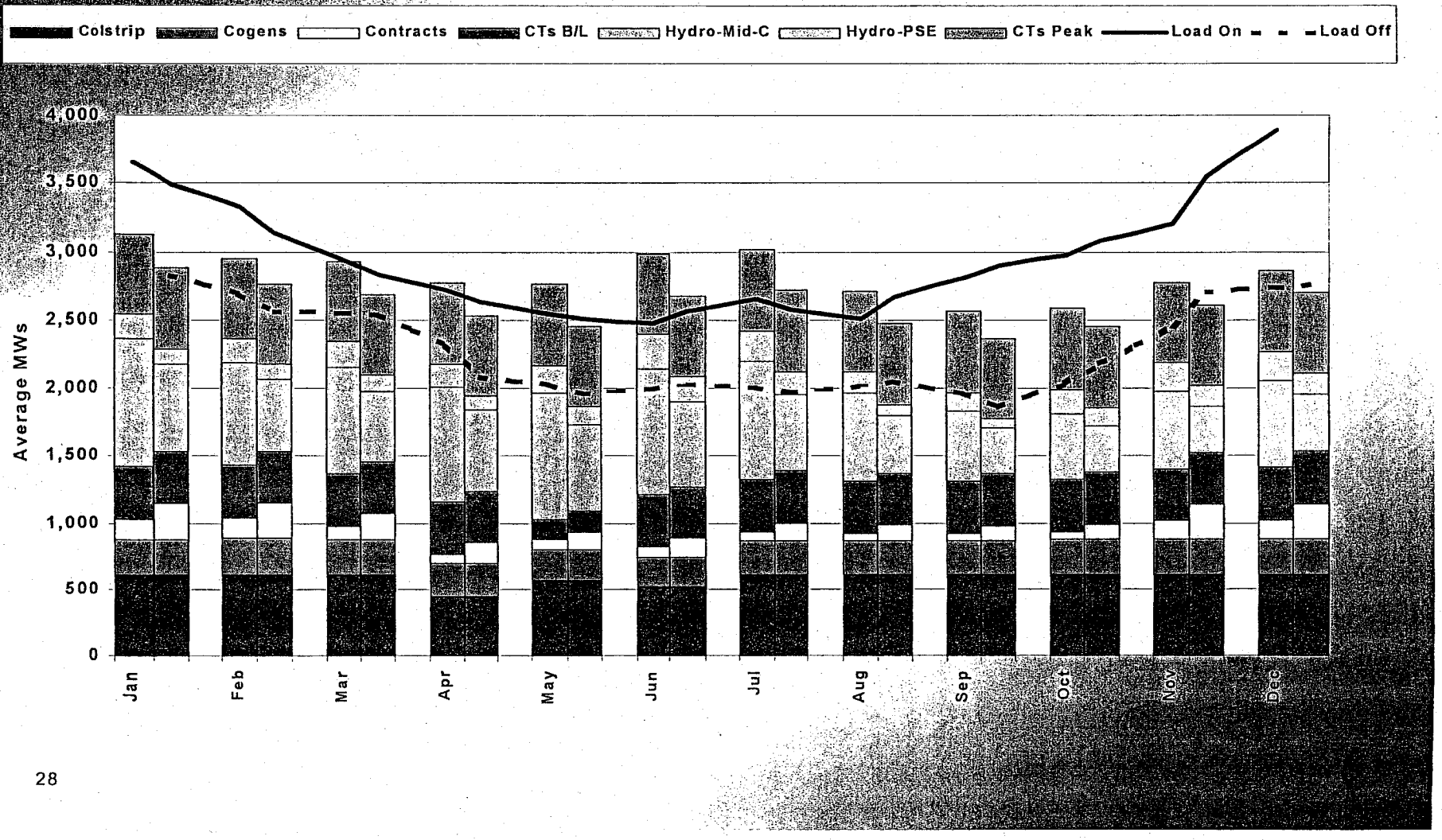
Load/Resource Balance - On Peak/Off Peak 2008



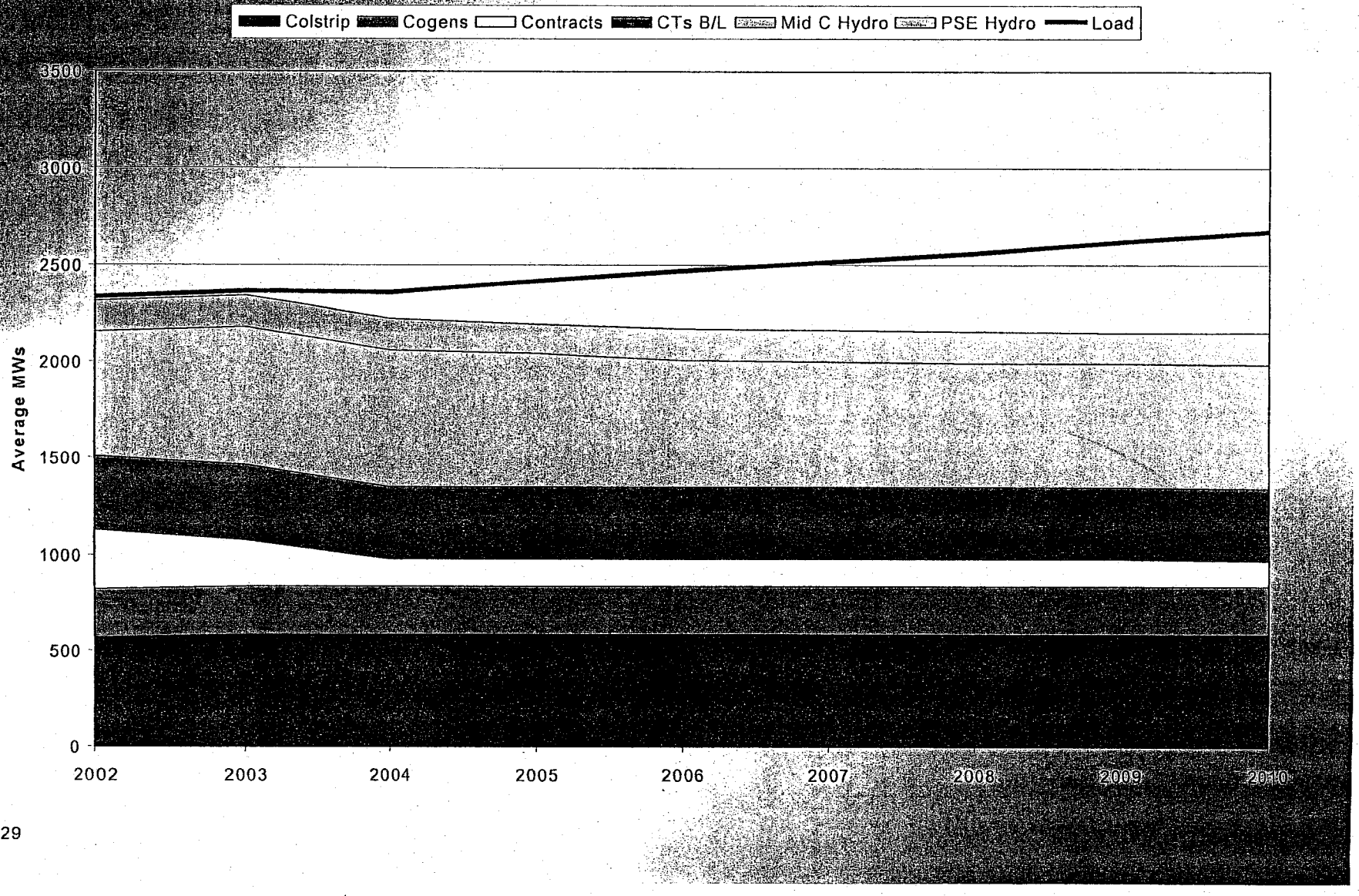
Load/Resource Balance - On Peak/Off Peak 2009



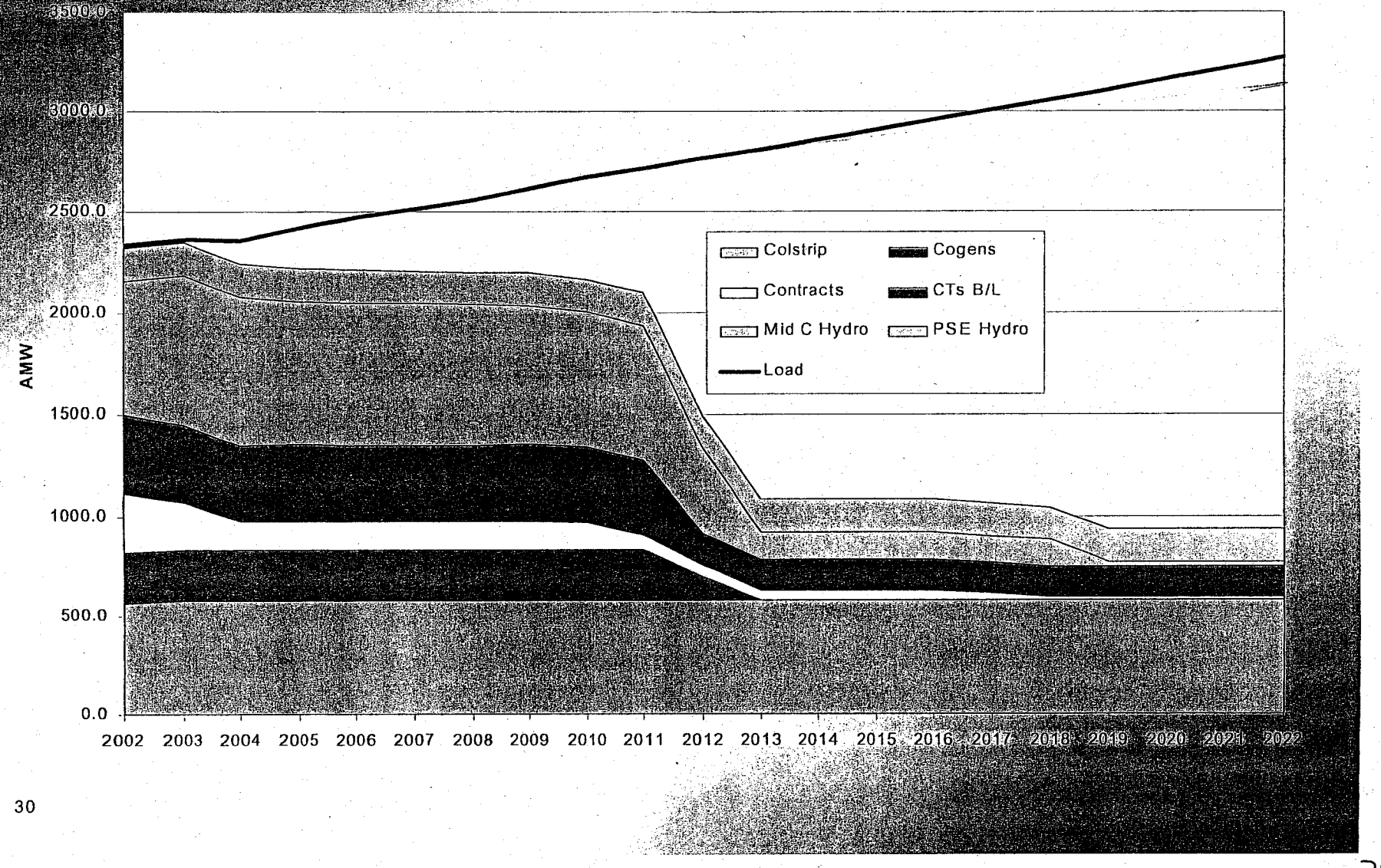
Load/Resource Balance - On Peak/Off Peak 2010



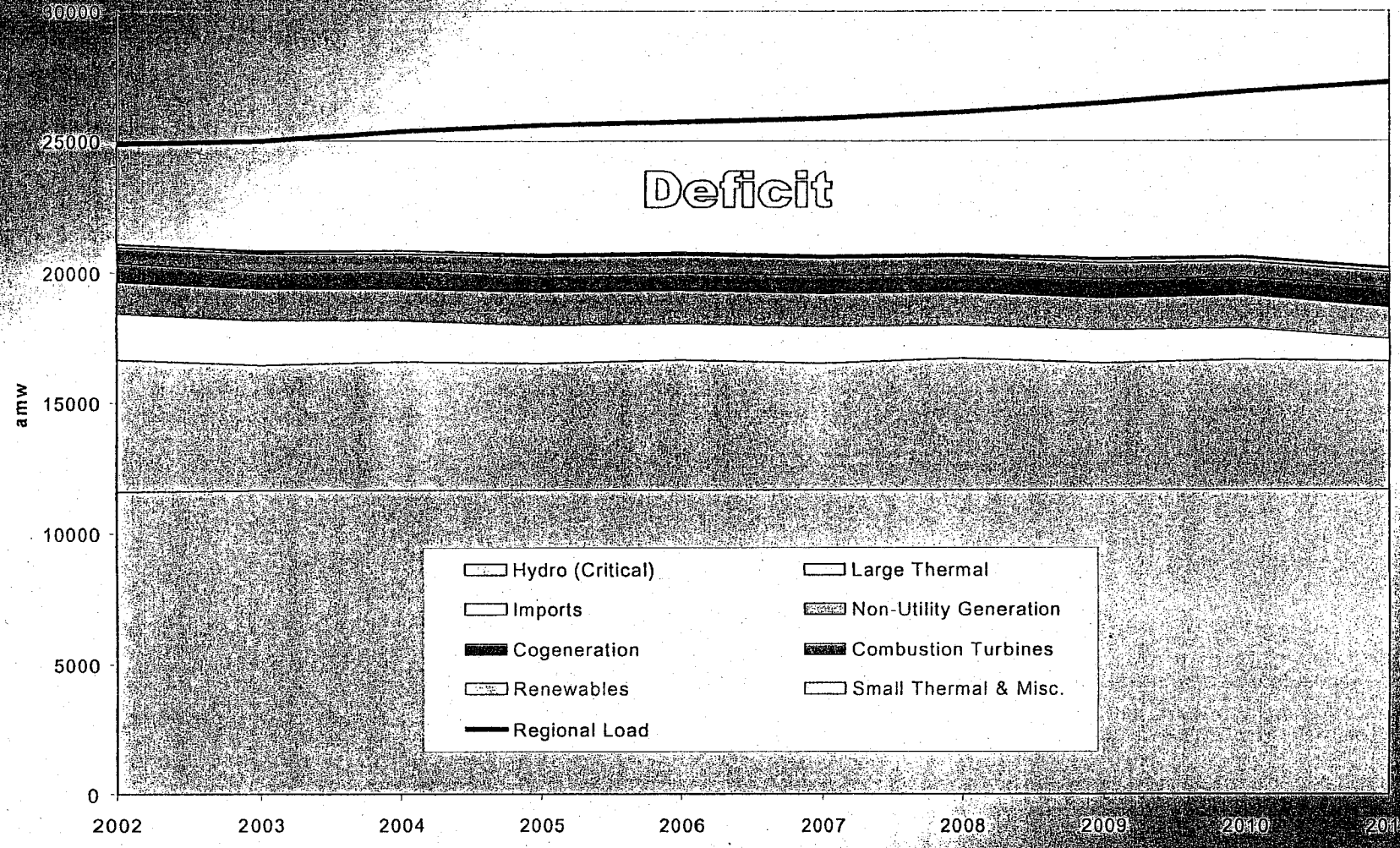
PSE Average Energy 2002-2010



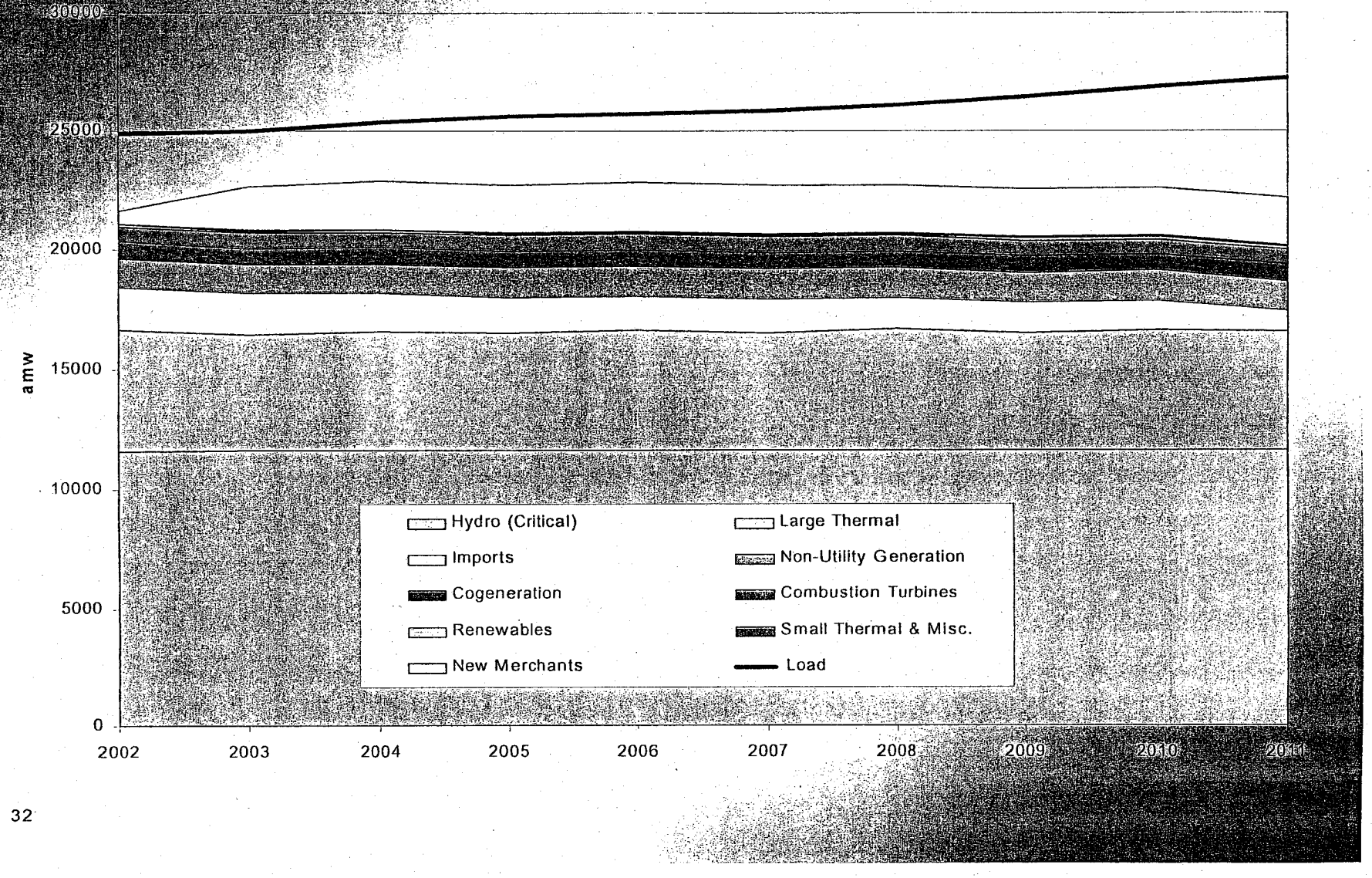
Existing Long Run Energy Resources



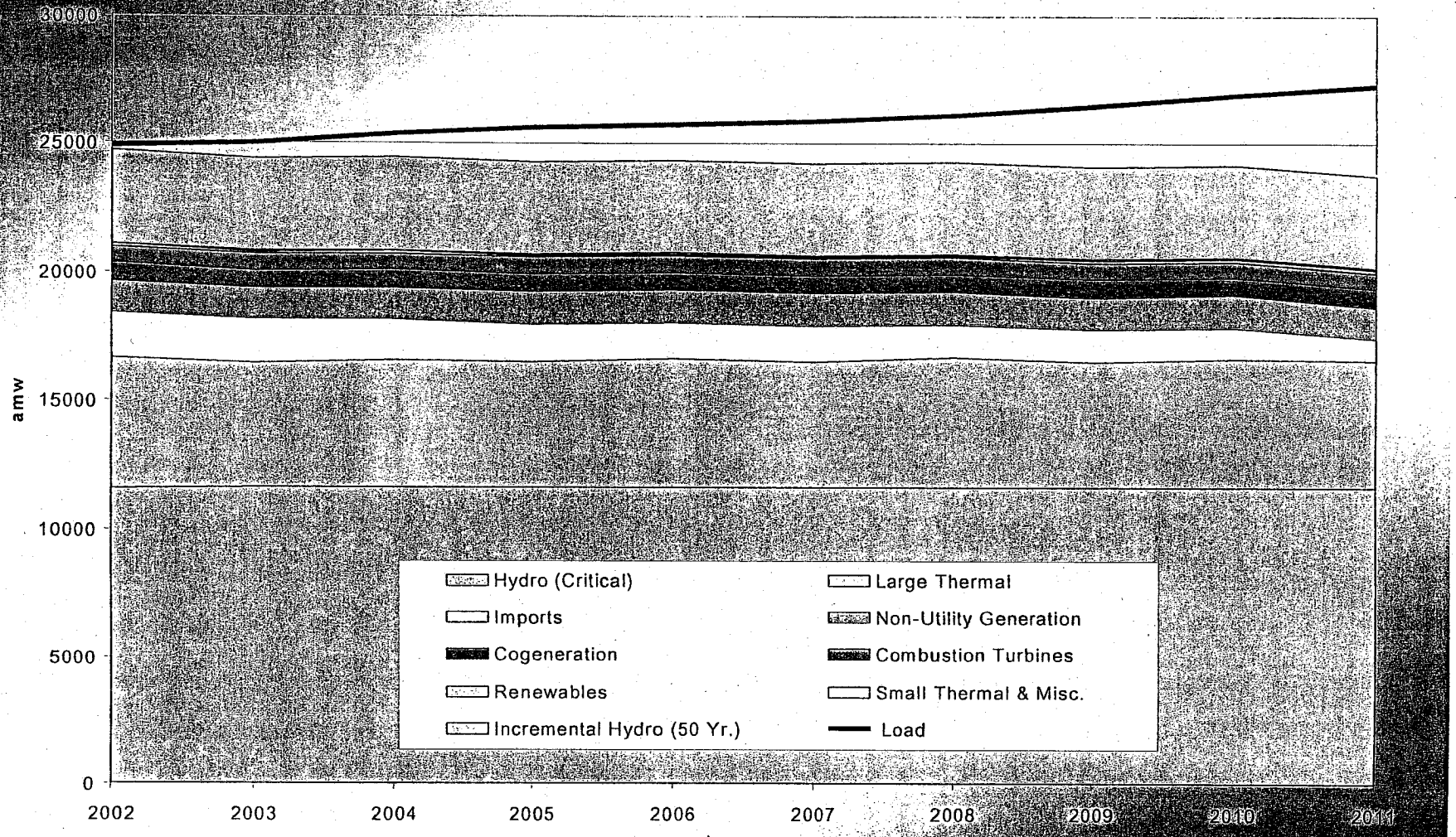
Northwest Region
BPA White Book (Base Case)



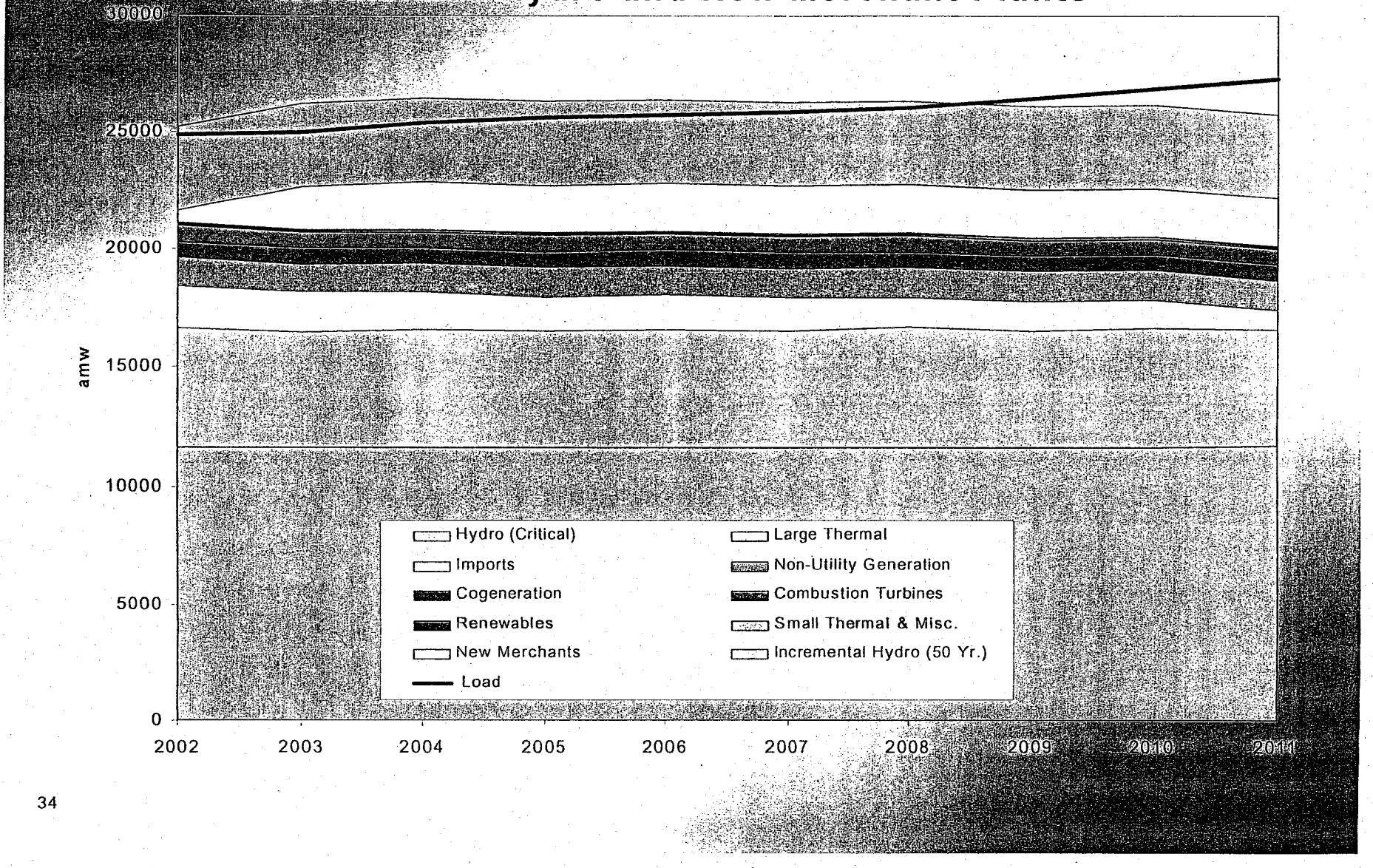
BPA's RegionalForecast with Merchant Plants



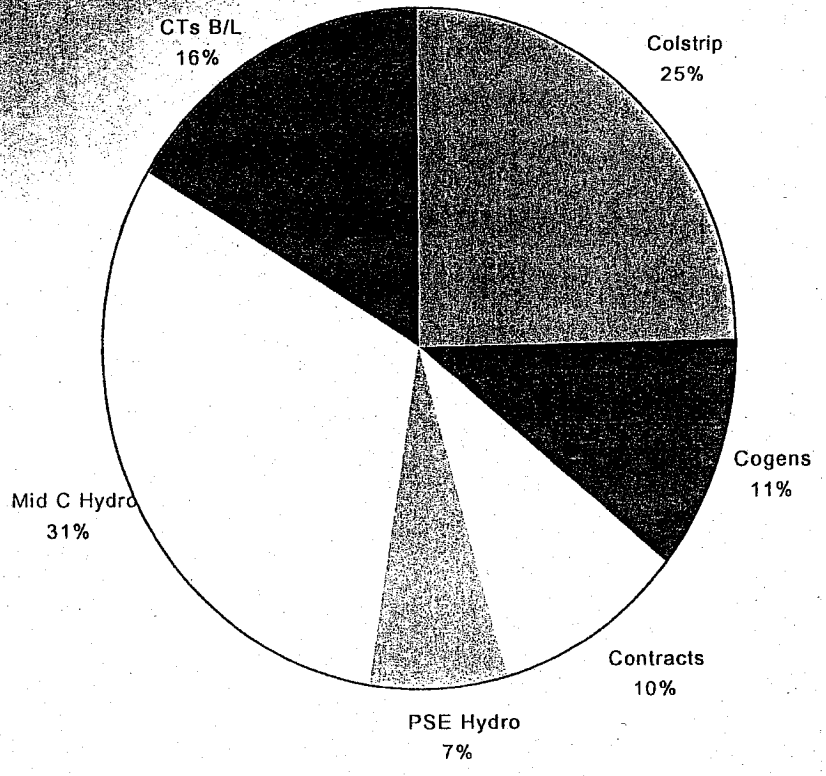
BPA's Regional Forecast with Normalized Hydro



BPA's Regional Forecast with Normalized Hydro and New Merchant Plants



2003 Energy (amw) by Source



AMW						Resources	
Year	Colstrip	Cogens	Contracts	PSE Hydro	Mid C Hydro	CTs B/L	Total
2003	582.0	257.3	230.6	162.7	734.7	382.2	2349.5

Transmission - Summary

Development/Purchase of new resources must include analysis of transmission issues due to current system constraints and unknown congestion management design of RTO-West.

- Delivery constrained from North (Whatcom/Skagit) due to PSE and BPA systems.
- Delivery from East constrained due to West of Hatwai cutplane.
- Delivery from South (Oregon) constrained subject to Northern Cascade flows/constraints.

Transmission - System Constraints

- **PSE Constraints**
  - Whatcom and Skagit Counties
- **BPA Constraints Affecting PSE**
  - West of Hatwai
  - Northwest to Canada (BPA Treaty Obligation)
  - Canada to Northwest
  - Cross Cascades North
  - California Oregon Interconnect (COI)

PSE System Constraints

• Whatcom and Skagit Constraints

- Issue: Generation greater than load. PSE has a limited amount of transfer capacity between Whatcom, Skagit and King Counties. PSE has a right to transmit between 625 MW and 700 MW from the north into King County via PSE's ownership of 230kV and 115kV transmission lines and contracts with BPA.
- Magnitude: There is no more transmission capacity available to bring additional generation out of Whatcom and Skagit Counties.
- Cost: The cost to integrate a 700 MW resource into PSE's system has been determined to be between $50 and $80 million. That cost may be mitigated by work BPA is contemplating.

BPA Constraints Affecting PSE

- **West of Hatwai**
  - Issue: Inability to transmit Colstrip to PSE system
  - Magnitude: 150 MW to 200 MW max
  - Cost: Approximately $1,000,000 per week of curtailment at 175 MW and $35/MWh.
- **Northwest to Canada (BPA Treaty Obligation)**
  - Issue: May require the operation of PSE generation in Whatcom and Skagit Counties at PSE expense to fix a BPA problem.
  - Magnitude: 280 MW max over the next few years, increasing to 420 MW max when all Canadian Entitlement must be returned.
  - Cost: Approximately $25,000 per day of forced out of market operation of the CTs.

BPA Constraints Affecting PSE (cont.)

- **Canada to Northwest**
  - Issue: Inability to import energy from Canada. This is an issue for our balancing purchases not a limitation on PSE's firm power supplies or PSE's ability to meet load.

- **Cross Cascades North**
  - Issue: Inability to transmit all Mid-Columbia and Colstrip into the Puget Sound area. However, currently there is transfer capability in excess of firm commitments, so there is not an issue with imports. BPA has received requests for transfers over the path that, when added to the existing firm commitments, exceed the transfer capability.

BPA Constraints Affecting PSE (cont.)

- **California Oregon Interconnect (COI)**
  - Issue: Limits ability to transfer energy to or from PG&E. Deliveries from PG&E affect PSE's ability to meet its Puget Sound area loads.
  - Magnitude: Up to 150 MW on any hour
  - Cost: Less than $200,000 annually because of the contractual flexibility to have energy delivered on any hour. The $200,000 is based on the difference between HLH and LLH prices.

Four Track Strategy: Implementation and Progress

- Build and Own
- Resource Specific (w/ Developers)
- Standard Products (Market)
- Renewables

Build and Own

"Greenfield" Site Selection Process

- Created the Long List
- Pared it down

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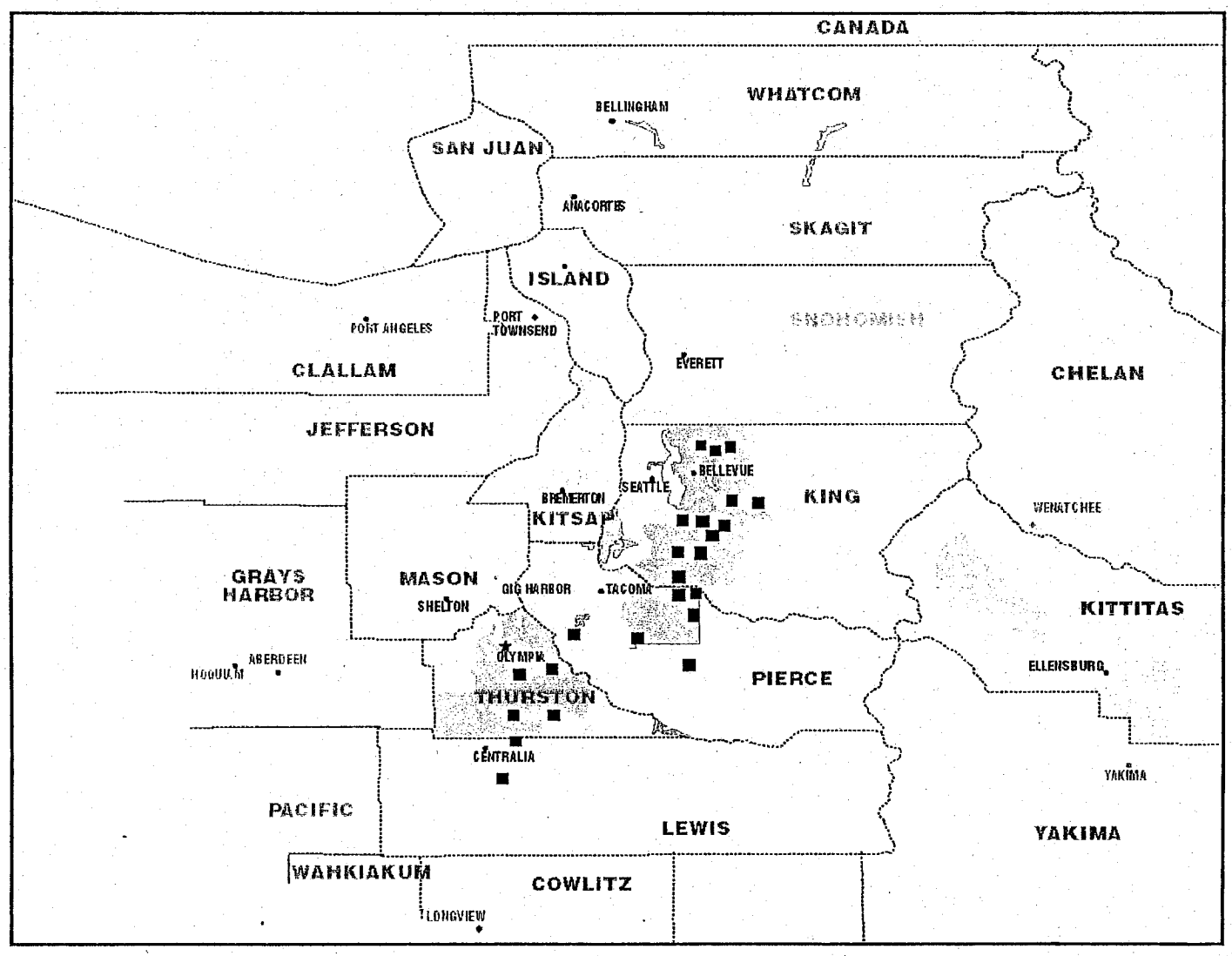
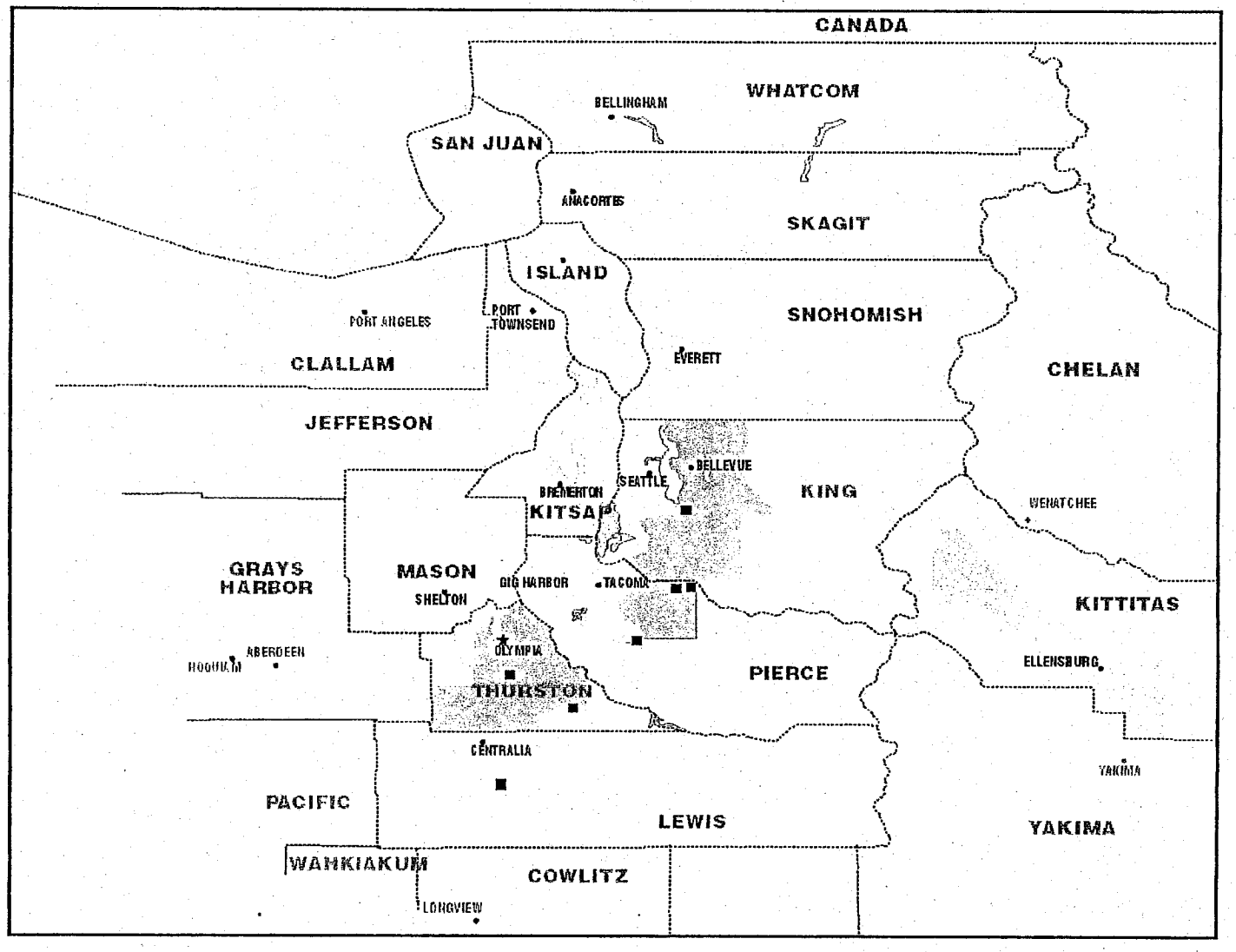
PUGET SOUND ENERGY SERVICE TERRITORY



Build and Own - First Cut

- Jackson Prairie
- Frederickson
- Thurston Co. Airport
- Metro (small)
- Sumner
- Dieringer (small)
- White River
- Rainier-Yelm

PUGET SOUND ENERGY SERVICE TERRITORY



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Resource Specific Products

- 36 Projects identified that are under construction or proposed for the Northwest
- 9 of the plants will be online by end of 2003
  - 5 on the west side
  - 4 on the east side
  - 2 could direct connect to PSE system

MERCHANT PLANTS

Updated 6/19/02

GAS FIRED

	Developer	Project		Commercial Operation	Project Descr	Installed capacity	Peak capacity	Heat Rate Btu/kwh	Cost (Mil)	Location
1	Calpine	Hermiston Power Partnership	Q3	2002	CCCT	536	636	6900		Hermiston, OR
2	TransAlta	Big Hanaford	Q3	2002	CCCT	248	270	8000		Centralia, WA
3	Duke/EPCOR	Frederickson Power,LP I	Q3	2002	CCCT	249	270	7100	200	Frederickson, WA
4	Avista/Mirant	Coyote Springs II	Q4	2002	CCCT	280	302	6800	330	Boardman, WA
5	Calpine	Goldendale Energy Center	Q1	2003	CCCT	248		7100		Goldendale, WA
6	Northwestern Corporation	Montana First Megawatts	Q2	2003	CCCT	260	290	~7000		Great Falls, MT
7	Duke	Grays Harbor Energy Facility I	Q3	2003	CCCT	650		7160	425	Satsop, WA
8	Mirant	Mint Farm	Q3	2003	CCCT	286	323	6800		Longview, WA
9	Tractebel	Chehalis Power	Q4	2003	CCCT	520		7000	400	Chehalis, WA
	Subtotal					***3277***				
10	Duke/EPCOR	Frederickson Power,LP II	Q3	2004	CCCT	250	290	7100		Frederickson, WA
11	NESCO	Plymouth	Q1	2005	CCCT	306	320	7000	595	Plymouth, WA
12	Calpine	Turner Energy Center	Q2	2005	CCCT	620		7000		Turner, OR
13	Peoples Energy Resources	COB Project	Q2	2005	CCCT	800	1200	~7000		Bonanza, OR
14	FPL	Everett Delta I	Q3	2005	CCCT	250				Everett, WA
15	Wasserstein Perella	Everett Delta II		2005	CCCT	248				Everett, WA
16	Ida-West Energy	Garnet Energy Facility 1	Q3	2005	CCCT	273		~7000		20 miles w. of Boise
17	Newport Generation	Kootenai Power Project	Q3	2005	CCCT	1300				Rathdrum, ID
18	Newport Generation	Wallula Generation LLC	Q3	2005	CCCT	1300			550	Wallulla, WA
19	Williams Energy	Wanapa	Q4	2005	CCCT	1000	1230	7000		McNary, WA
20	BBI Power Corp/Continental Energy	Silver Bow	Q1	2005	CCCT	500		7000		near Butte, MT
21	Brett Wilcox, et al./Summit Power	The Cliffs	Q1	2005	CCCT	290	300	6850		near Goldendale, OR
22	Brett Wilcox, et al./Summit Power	Summit/Westward	Q1	2005	CCCT	517	530	6677		near Clatskanie, OR
23	Cogentrix Energy	Grizzly Power LLC		2005	CCCT	918	1090	7100		near Grizzly, OR, Madras
24	Cogentrix Energy	North Idaho Power Project		2005	CCCT	800				Rathdrum, ID
25	Enron	Longview Energy Development Project		2005	CCCT	290		7000		Longview, WA
26	Ida-Corp Energy	SNO-PUD/Ida Corp Energy		2005	CCCT	250		7000		near Everett, WA
27	PG&E National Energy Group	Umatilla		2005	CCCT	620		~7000		Umatilla, OR
28	BP	Cherry Point Cogeneration Project	Q4	2006	CCCT	720		7000	450	Birch Bay, Whatcom Cty.
29	Calpine	Tahoma Energy Center		2006	CCCT	250				Frederickson, WA
30	NESCO	Sumas Energy II		2006	CCCT	660			400	Sumas, WA
31	PGE	Port Westward		2006	CCCT	530	650			Beaver, OR
32	NESCO	Ranier Energy LLC			Cogen	300				Tumwater, WA
33	Ida-West Energy	Garnet Energy Facility 2			CCCT	262				Middleton, ID
34	Northwest Power Enterprises	Starbuck Generation Facility			CCCT	1200			535	Starbuck, WA
35	PacifiCorp Power Marketing	Klamath Generating Facility			CCCT	480		7000		Klamath Falls, OR
36	PG&E Generating Co.	Morrow Generating Project			CCCT	550				Port of Morrow, OR
	Subtotal					***15484***				
	Total					***18761***				

Merchant Projects

On Line by 2003

Developer	Project	MW	Date	Credit	Location	
Calpine	Hermiston	536	Q3 - 02	B1	E	Hermiston
Trans Alta	Big Hanaford	248	Q3 - 02	Baa1	W*	Centralia
Duke/EPCOR	Frederickson LP I	249	Q3 - 02	A1	W*	Frederickson
Avista/Mirant	Coyote Springs II	280	Q4 – 02	Ba1/Ba1	E	Boardman
Calpine	Goldendale	248	Q1 – 03	B1	E	Goldendale
Northwestern	Montana First	260	Q2 - 03	Baa2	E	Great Falls
Duke	Grays Harbor	650	Q3 - 03	A1	W	Satsop
Mirant	Mint Farm	286	Q3 - 03	Ba1	W	Longview
Tractebel	Chehalis Pwr.	520	Q4 - 03		W	Chehalis

Merchant Projects

West Side Projects - Post 2003

Developer	Project	MW	Date	Location
Duke/EPCOR	Frederickson LP II	250	Q3 - 04	Frederickson
FPL	Everett Delta I	248	2005	Everett
Enron	Longview EDP	290	2005	Longview
Ida-Corp	SnoPUD-Ida-Corp	250	2005	Near Everett
BP	Cherry Pt. Cogen	720	2006	Whatcom Co.
Calpine	Tahoma	250	2006	Frederickson
NESCO	Sumas II	660	2006	Sumas
NESCO	Rainier Energy	300		Tumwater

Standard Market Products

- Flat load (7x24)
- Peak Load (6x16)
- Annual
- Seasonal

Renewables

- Discussions with 3 wind energy developers, and scheduled to meet with a fourth.
- Discussions with KC-Metro and SCL regarding Cedar Hills project
- Will continue to work with BEF and others to develop Dairy biogas site within the PSE territory
- Resources available outside the Northwest.

Renewables: Wind in OR and WA

Completed and/or Near Contract

Developer	Name	MW	Date	Location
Sea West	Condon I	25	Q4 - 01	Gilliam Co, OR
NW Windpower	Klondike	24	Q4 - 01	Sherman Co, OR
FPL/Pacificorp	Stateline I	284	Q4 - 01	Benton Co.
Pacific Winds	Horse Heaven	150	Q2 - 02	Benton Co.
Pacific Winds	Maiden	150	Q4 – 02	Benton Co.
Cielo Wind Pwr	Columbia	80	Q4 - 03	Klickitat Co.
Sea West	Roosevelt	100	Q4 - 03	Klickitat Co.
Sea West	Summit Ridge	25	Q4 - 03	Klickitat Co
Sea West	Terjeson	80	Q4 - 03	Umatilla, OR
Sea West	Condon II	25	Q2 - 02	Condon, OR