

# APPENDIX A

Facility	Date In Service	Gross Nameplate Capacity (MW)	Station (MW)	Diadromous Fish Passage	Water Quality Certification	ISO-NE Asset ID	NEPOOL GIS Facility Code	FERC License	River	Station Address	Latitude	Longitude
Amoskeag G-1*	1924	6.00	16.00	Upstream & Downstream	CWA Section 401	327	MSS327	1893	Merrimack	Amoskeag Station 15 Fletcher Street Manchester, NH	43° 00' 08" N	71° 28' 21" W
Amoskeag G-2	1924	5.00										
Amoskeag G-3	1922	5.00										
Ayers Island G-1	1924	2.80	8.40	Downstream <sup>1</sup>	CWA Section 401	330	MSS330	2456	Pemigewasset	Ayers Island Station 59 Ayers Island Road Bristol, NH	43° 35' 51" N	71° 43' 01" W
Ayers Island G-2	1924	2.80										
Ayers Island G-3	1924	2.80										
Canaan G-1	1927	1.10	1.10	None <sup>2</sup>	NH & VT <sup>5</sup>	861	MSS861	7528	Connecticut	Canaan Station 344 Powerhouse Road Canaan, VT 05903	44° 59' 47" N	71° 32' 02" W
Eastman Falls G-1	1937	1.80	6.40	Downstream <sup>1</sup>	None <sup>6</sup>	401	MSS401	2457	Pemigewasset	Eastman Falls Station 215 North Main Street Franklin, NH 03235	43° 26' 51" N	71° 39' 30" W
Eastman Falls G-2	1983	4.60										
Garvins Falls G-1	1981	3.30	12.20	Downstream <sup>1</sup>	CWA Section 401	768	MSS768	1893	Merrimack	Garvins Falls Station 5 Garvins Falls Road Bow, NH 03304	43° 09' 53" N	71° 30' 27" W
Garvins Falls G-2	1981	3.30										
Garvins Falls G-3	1925	2.40										
Garvins Falls G-4	1925	3.20										
Gorham G-1	1917	0.40	2.15	None <sup>2</sup>	CWA Section 401	427	MSS427	2288	Androscoggin	Gorham Station 1 Station Road Gorham, NH 03581	44° 23' 20" N	71° 09' 52" W
Gorham G-2	1917	0.40										
Gorham G-3	1923	0.675										
Gorham G-4	1923	0.675										
Hooksett G-1	1927	1.60	1.60	Downstream <sup>3</sup>	CWA Section 401	768	MSS768	1893	Merrimack	Hooksett Station 73 Merrimack Street Hooksett, NH 03106	43° 06' 03" N	71° 27' 54" W
Jackman G-1	1926	3.20	3.20	None <sup>4</sup>	None <sup>7</sup>	449	MSS449	None <sup>8</sup>	North Branch Contoocook	Jackman Station 8 Sawmill Road Hillsborough, NH	43° 06' 44" N	71° 55' 32" W

\* Amoskeag G-1 was not in original application

<sup>1</sup> Upstream fish passage not required under FERC license

<sup>2</sup> Upstream and downstream fish passage not required under FERC license

<sup>3</sup> Upstream fish passage required three years after 9,500 shad or 22,500 river herring pass Amoskeag Station

<sup>4</sup> Outside of FERC jurisdiction; fish passage not required

<sup>5</sup> New Hampshire Water Supply and Pollution Control Commission and Vermont Department of Water Resources and Environmental Engineering issued water quality certificates on August 2, 1983 and May 10, 1984, respectively

<sup>6</sup> CWA Section 401 certification not required under FERC license

<sup>7</sup> Outside of FERC jurisdiction; water quality certification not required

<sup>8</sup> Outside of FERC jurisdiction

# **APPENDIX B**

# ALTERNATING CURRENT GENERATOR

NO.

2540032

TYPE

ATB

64

6250M

112.5

FORM

V

AMP

1569

P.F.

.8

SPEED

112.5

KW.

5000

VOLTS NO LOAD

CYCLES 60



VOLTS FULL LOAD

2300

6250KV-A CONTINUOUS 50% RISE

# GENERAL ELECTRIC CO.

## SCHENECTADY, N.Y., U.S.A.

# ALTERNATING CURRENT GENERATOR

NO. 2540033

TYPE ATB 64 6250M 112.5 FORM V

AMP 1569

SPEED 112.5

P.F. .8

KW. 5000

VOLTS NO LOAD



VOLTS FULL LOAD  
2300

6250KV-A. CONTINUOUS 50°C. RISE

## GENERAL ELECTRIC CO. SCHENECTADY, N.Y., U.S.A.

# ALTERNATING CURRENT GENERATOR

NO. 4095858

TYPE **ATS** **64** - **7500M** - **112.5** **FORM V**

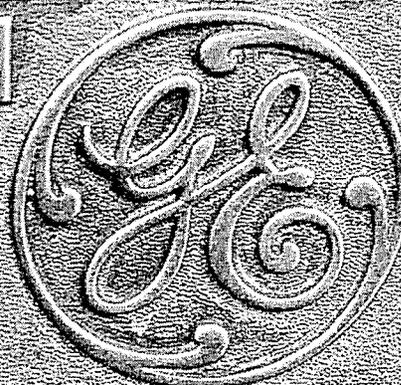
AMR **1883**

SPEED **112.5**

PF **8**

KW **6000**

VOLTS NO LOAD



VOLTS FULL LOAD

CYCLES **60**

**2500**

AMP. FLD. 220 - 7500 KV-A. CONTINUOUS 50°C. RISE PAT. FEB. 6-23

# GENERAL ELECTRIC CO.

## SCHENECTADY, N.Y., U.S.A.

# SYNCHRONOUS **NEI** GENERATOR

FR.	5111	
FR.	4600	
VOLTS	2400	A.C.
AMPS.	1229.5	A.C.
HERTZ	60	
PHASES	3	
P.F.	0.9	
REFL.	900	
FLD. VOLTS	90 (83)	D.C.
FLD. AMPS.	293	D.C.

SERIAL NO.	18201525-200
TYPE	L-11204
CODE	
DUTY	CONTINUOUS
TEMP. RISE-ARM.	80°C BY RTD
TEMP. RISE-FLD.	80°C BY RES.
TEMP. AMB.	40°C
INS. CL.-ARM.	F
INS. CL.-FLD.	F
OVERLOAD	NEMA MG1-22.41
BEARINGS	SLEEVE
CONNL. DIAG.	A-66115 & A-70673-1
INSTRUCTIONS	SM-1390-2

PARSONS PEEBLES-ELECTRIC PRODUCTS, INC.  
 CLEVELAND, OHIO, 44112, U.S.A.

B70202-T

# ALLIS - CHALMERS

## HYDRO-ELECTRIC UNIT

### TURBINE

H.P. - 4700

R.P.M. - 138.5

HEAD - 30

TYPE - A.V.

No - 871

### GENERATOR

K.V.A. - 4000

VOLTS - 12000

AMP. 193, PH. 3

CYCLES - 60

No - 117795

ALLIS - CHALMERS MFG. CO.

MILWAUKEE, WIS., U.S.A.

# ALLIS - CHALMERS

## HYDRO-ELECTRIC UNIT.

### TURBINE

H. P. . . . 3500

R. P. M. . . . 150

HEAD . . . . 30

TYPE . . . . A. V.

No . . . . 872

### GENERATOR

K. V. A. . . . 3000

VOLTS . . . . 12000

AMP. 144, PH. 3

CYCLES . . . . 60

No . . . . 117796

ALLIS - CHALMERS MFG. CO.

MILWAUKEE, WIS., U. S. A.

# APPENDIX C

FERC Issued Licenses and Exemptions in ISO-NE Control Area as of 8/5/2008

#	Project No.	Project Name	Licensee	Waterway	State	Authorized	Issuance	Expiration
						Capacity (KW)	Date	Date
362	07464	MARDEN BROOK	MOSER MARGARET & ALEXIS	MARDEN BROOK	NH	5	12/13/1983	
333	07047	HALLS BROOK	THANHAUSER S R J	LEE	VT	5	3/3/1983	
264	06429	RUSSELL MILL POND	MICHAEL GOODMAN	EEL RIVER	MA	15	5/9/1983	
403	07979	FOSS MILL	GRAHAM PETER C	MARSH STREAM	ME	15	6/14/1984	
319	06940	GARLAND MILL	SOUTHWORTH THOMAS R & HARRISON T	GARLAND BROOK	NH	15	1/20/1983	
298	06649	FAIRBANKS MILL	DONAHUE, MICHAEL J.	SLEEPERS RIVER	VT	18	10/8/1982	
302	06684	DAYS MILL	James Quincy	KENNEBUNK R	ME	30	10/6/1982	
378	07591	WIGHT BROOK	SYSKO JAMES D	WIGHTBROOK	ME	30	12/23/1983	
432	08450	STONEY BROOK	SMALL HYDRO EAST (ME)	STONEY BROOK	ME	35	9/27/1985	
452	08791	STARKS	VAUGHN MARK A	LEMON STREAM	ME	35	5/14/1985	
962	11217	STILL RIVER	MACKOWIAK, RICHARD G.	STILL RIVER	CT	37	11/18/1992	10/31/2032
589	12605	STAMFORD ENERGY RECOVERY PROJECT	RENTRICITY, INC.	AQUARIAN WATER COMPANY CONDUIT	CT	40	12/29/2005	
590	12608	ALTERNATIVE HYDRO POWER PROJECT	ALTERNATIVE UNLIMITED, INC.	MUMFORD RIVER	MA	45	12/8/2006	
486	09421	GARDNER BROOK	SYSKO JAMES D	GARDNER BROOK	ME	50	3/27/1986	
827	07961	PETTYBORO BROOK	ROBERT MCHUGH/ELLYSON CO INC (MA)	PETTYBORO BROOK	NH	58	1/11/1985	12/31/2034
518	10200	CONGDON DAM	WHIPPLE HYDRO POWER CORP	OXOBOXO BROOK	CT	60	12/9/1987	
103	04254	EXETER RIVER HYDRO #1	PHILLIPS PAUL T	KAMARA	NH	60	12/1/1981	
475	09079	UPPER SPEARS STREAM	VAUGHN MARK A	UPPER SPEARS STREAM	ME	65	9/30/1985	
232	06077	OLD STURBRIDGE VILLAGE	OLD STURBRIDGE VILLAGE OF (MA)	QUINEBAUG RIVER	MA	68	6/9/1982	
433	08486	UNION VILLAGE DAM	W M LORD EXCELSIOR CO (CT)	KAMARA	NH	75	3/5/1985	
168	05274	SQUAM LAKE DAM	ASHLAND TOWN OF (NH)	SQUAM RIVER	NH	80	1/27/1982	
434	08505	ABBOTTS MILL	SHOREY, ROBERT E., JR.	CONCORD RIVER	ME	90	1/31/1985	
485	09411	BISCOE FALLS	JOHN CROUCH JR & SONS (ME)	LITTLE ANDROSCOGGIN RIVER	ME	93	5/5/1986	
442	08640	SEABRIGHT DAM	SEABRIGHT HYDRO INC (ME)	MEGUNTICOOK RIVER	ME	94	6/21/1985	
346	07236	FORSTERS' MILL	OTTER LANE HYDRO L. L. C. (MA)	LANE RIVER	NH	96	1/25/1984	
958	11168	DAYVILLE POND	SUMMIT HYDROPOWER (CT)	FIVE MILE RIVER	CT	100	6/29/1992	5/31/2032
593	02985	WILLOW MILL	MEAD PAPER CORP (MA)	HOUSATONIC RIVER	MA	100	5/1/1981	4/30/2011
272	06474	EASTMAN BROOK	EVANS, MARGARET	EASTMAN BROOK	NH	100	9/7/1982	
489	09509	CHESHIRE DAM	D D BEAN & SONS CO INC (NH)	HSU	NH	100	6/2/1986	
423	08354	KILLINGTON	KILLINGTON HYDRO INC (VT)	LEE	VT	100	9/30/1985	
190	05638	ASHLAND PAPERMILL	FRESHWATER HYDRO INC (NH)	SQUAM RIVER	NH	105	4/9/1982	
509	09984	ROCKY GLEN	ROCKY GLEN HYDRO LTD PARTNERSH (MA)	SUM	CT	110	2/11/1987	
102	04253	RIVER STREET	RIVER STREET ASSOCIATES (NH)	NUBANUSIT BROOK	NH	112	5/4/1982	
497	09728	POWDER MILL POND	SOUTH BARRE HYDRO ELECTRIC CO (MA)	WARE RIVER	MA	120	10/15/1986	
363	07473	GILMAN STREAM	DALTON LLOYD C & MARGARET S (ME)	GILMAN STREAM	ME	120	6/17/1987	
882	09650	GILMAN DAM	FACTORY FALLS INC. (VT)	LEE	VT	125	7/18/1986	6/30/2026
351	07268	WOODSIDE	WOODSIDE ROBERT M	MUKHERJEE	VT	125	6/10/1983	
401	07922	CHAMBERLAIN FALLS	GREENWOOD ALDEN T	SOUHEGAN RIVER	NH	130	3/11/1985	
405	07982	CELLEY MILL	EVANS, MARGARET	EASTMAN BROOK	NH	140	9/24/1984	
866	09100	RIVERDALE MILLS	KNOTT JAMES M	KAYE	MA	150	6/15/1987	5/31/2017
57	03320	SUGAR RIVER 1	RUGER JR WILLIAM B	SUGAR RIVER	NH	150	1/14/1988	
110	04318	NOONE MILLS DAM	THE COBBS, LLC.	HSU	NH	150	12/4/1981	
399	07920	WATERLOOM FALLS	GREENWOOD ALDEN T	SOUHEGAN RIVER	NH	150	3/11/1985	
880	09648	FELLOWS DAM	SIEMENS WESTINGHOUSE TECH SERVICES.	LEE	VT	150	7/18/1986	6/30/2026
881	09649	LOVEJOY DAM	LOVEJOY TOOL CO INC (VT)	BLACK RIVER	VT	150	7/29/1986	6/30/2026
125	04542	BOSTON FELT	BOSTON FELT CO (NH)	SALMON FALLS RIVER	NH	157	8/29/1983	
420	08242	LADDS MILL	WORCESTER HYDRO CO (VT)	NORTH BRANCH WINOOSKI RIVER	VT	171	6/11/1985	
343	07148	ASSABET DAM	ACTON HYDRO ELECTRIC (MA)	ASSABET RIVER	MA	178	11/16/1983	
305	06752	AVERY DAM	NEW HAMPSHIRE WATER RESOURCES (NH)	WINNIPESAUKEE RIVER	NH	192	3/22/1985	
947	10934	SUGAR RIVER II	RUGER JR WILLIAM B	SUGAR RIVER	NH	200	5/9/1991	4/30/2021
400	07921	OTIS FALLS	GREENWOOD ALDEN T	SOUHEGAN RIVER	NH	200	3/11/1985	
211	05824	NORTH VILLAGE POND	WEBSTER HYDROELECTRIC CO INC (MA)	KAYE	MA	201	5/27/1982	

FERC Issued Licenses and Exemptions in ISO-NE Control Area as of 8/5/2008

#	Project No.	Project Name	Licensee	Waterway	State	Authorized	Issuance	Expiration
						Capacity (KW)	Date	Date
361	07434	KINGSBURY	KINGSBURY HYDROELECTRIC CO (NH)	KINGSBURY BRANCH WINOOSKI RIVER	VT	220	11/18/1983	
83	03894	TREMONT	WAREHAM TOWN OF (MA)	WEWEANTIC RIVER	MA	225	5/27/1981	
508	09983	ASHLEY RESERVOIR	PITTSFIELD CITY OF (MA)	SUM	MA	225	2/11/1987	
639	03309	NASH MILL DAM	MARLOW HYDRO, LLC.	DEUBERT	NH	225	12/30/1982	11/30/2022
307	06757	DOG RIVER	NANTANA MILLS DAM PARTNERSHIP	MUKHERJEE	VT	228	11/29/1984	
391	07809	EMERSON FALLS	EMERSON FALLS HYDRO ASSOCIATES (VT)	SLEEPERS RIVER	VT	230	1/28/1985	
484	09403	RIVERMILL MASCOMA	RIVERMILL HYDROELECTRIC INC (NH)	MASCOMA R	NH	234	9/21/1988	
954	11143	GLEN FALLS	GLENN FALLS HYDRO, LLC.	MOOSUP RIVER	CT	250	3/2/1992	2/29/2032
573	02927	AQUAMAC	AQUAMAC CORP (MA)	SOUTH CANAL	MA	250	3/1/2001	2/28/2031
515	10163	CRESTICON	L.P. ATHOL CORP. (MA)	MONAHAN	MA	250	2/12/1988	
953	11132	EUSTIS	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	N.BR.DEAD RIVER	ME	250	12/27/1996	11/30/2026
174	05379	HADLEY FALLS	ALGONGUIN POWER INCOME FUND	PISCATAQUOG RIVER	NH	250	1/19/1982	
202	05735	HOPKINTON	HOPKINTON TOWN OF (NH)	KAMARA	NH	250	3/14/1984	
305	02396	PIERCE MILLS	CENTRAL VERMONT PUB SERV CORP (VT)	PASSUMPSIC RIVER	VT	250	12/8/1994	11/30/2034
808	07373	MARTINSVILLE	BOERI JOHN L 'JAY' JR	LULL BROOK	VT	250	12/28/1984	11/30/2034
756	06240	WATSON DAM	WATSON ASSOCIATES (NH)	KAMARA	NH	265	9/8/1983	8/31/2023
182	05563	WYANDOTTE	WOODSVILLE/ROCHESTER HYDRO (NH)	KAMARA	NH	266	7/14/1982	
429	08417	OLD SPARHAWK MILL	YALE THOMAS L & LEMAISTRE	ROYAL RIVER	ME	270	5/24/1985	
111	04320	SOUTH BARRE MILL POND	SOUTH BARRE HYDRO ELECTRIC CO (MA)	WARE RIVER	MA	275	7/24/1981	
333	02445	CENTER RUTLAND	OMYA, INC. (VT)	OTTER CREEK	VT	275	3/31/1993	12/31/2023
594	12769	ICE HOUSE POWER PROJECT	ICE HOUSE PARTNERS, INC.	NASHUA RIVER	MA	280	3/31/2008	
541	10720	GAILLARD	SOUTH CENTRAL CT REG WTR AUTH (CT)	KAYE	CT	300	11/15/1989	
516	02770	CROCKER MILL (C WHEEL)	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	300	6/29/1989	2/28/2021
215	05912	MOOSEHEAD	MOOSEHEAD MANUFACTURING CO (ME)	PISCATAQUIS RIVER	ME	300	6/2/1982	
449	08736	PIONEER DAM	ANTHONY CHRISTOPHER M	WEST BRANCH SEBASTICOOK RIVER	ME	300	6/3/1985	
89	03985	NORTH ROCHESTER	20 SPAULDING AVE REAL ESTATE, LLC.	SALMON FALLS RIVER	NH	300	6/30/1981	
129	04609	AMMONOOSUC RIVER DAM	NEW HAMPSHIRE WOOD PRODUCTS CO (NH)	DEUBERT	NH	307	11/1/1982	
514	02768	ALBION MILL (A WHEEL)	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	312	6/29/1989	2/28/2021
409	08012	HUNTS POND DAM	O'CONNELL ENGR & FINANCIAL INC.	MONAHAN	MA	320	2/19/1985	
492	09611	MECHANICSVILLE	SAYWATT HYDRO ASSOCIATES (NH)	SUM	CT	325	1/27/1988	
725	05261	NEWBURY	NEWBURY HYDRO CO (VT)	WELLS RIVER	VT	340	9/8/1983	8/31/2023
875	09300	APPLETON TRUST	LICHOULAS JAMES JR	KAYE	MA	346	7/18/1986	6/30/2026
512	02758	CROCKER MILL A/B	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	350	6/29/1989	2/28/2021
350	07254	WEST DUDLEY	A & D HYDRO INC (MA)	QUINEBAUG RIVER	MA	350	6/10/1983	
592	12629	CORRIVEAU	F&B WOOD CORPORATION	SWIFT RIVER	ME	350	10/24/2006	
307	02399	ARNOLD FALLS	CENTRAL VERMONT PUB SERV CORP (VT)	PASSUMPSIC R	VT	350	12/8/1994	11/30/2034
614	03090	VAIL	LYNDONVILLE VILLAGE OF (VT)	PASSUMPSIC RIVER	VT	350	3/11/2004	2/28/2034
831	08093	METHUEN FALLS	METHUEN FALLS HYDROELECTRIC CO (MA)	SPICKETT RIVER	MA	357	3/27/1986	2/28/2026
172	05307	WOODSVILLE	SWEETWATER HYDROELECTRIC INC (NH)	DEUBERT	NH	360	2/5/1982	
531	02804	GOOSE RIVER	GOOSE RIVER HYDRO INC (ME)	GOOSE RIVER	ME	375	3/24/1980	2/29/2020
348	07248	GILES POND	FRANKLIN FALLS HYDRO ELEC CO (NH)	SALMON BROOK	NH	375	5/16/1983	
736	05679	M.S.C.	TOUTANT HYDROPOWER INC. (CT)	QUINBAUG RIVER	CT	400	8/30/1984	7/31/2024
459	08895	TANNERY POND	FRENCH RIVER LAND COMPANY, INC.	MONAHAN	MA	400	4/20/1988	
105	04293	WAVERLY AVENUE	ANTHONY CHRISTOPHER M	SEBASTICOOK RIVER	ME	400	7/12/1983	
286	06618	FRANKFORT	ANTHONY CHRISTOPHER M	MARSH STREAM	ME	400	9/20/1982	
162	05195	DOWNERS MILL	SIMON PEARCE (US) INC (VT)	OTTAUQUECHEE RIVER	VT	400	5/4/1982	
310	06795	POWNAL	TOWN OF POWNAL, VT	MUKHERJEE	VT	400	4/1/1983	
410	08014	SLACK DAM	SPRINGFIELD HYDROELECTRIC CO (VT)	LEE	VT	400	9/30/1985	
234	06096	NEW HOME DAM	O'CONNELL ENERGY GROUP (MA)	MONAHAN	MA	427	12/28/1984	
299	02388	HOLYOKE NO 3	HOLYOKE CITY OF (MA)	MONAHAN	MA	450	9/28/1988	5/31/2020
518	02772	LINWEAVE WAREHOUSE (A WHEEL)	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	450	6/29/1989	2/28/2021
519	02775	LINWEAVE WAREHOUSE (D WHEEL)	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	450	6/29/1989	2/28/2021

FERC Issued Licenses and Exemptions in ISO-NE Control Area as of 8/5/2008

#	Project No.	Project Name	Licensee	Waterway	State	Authorized	Issuance	Expiration
						Capacity (KW)	Date	Date
451	08788	LEDGEMERE DAM	LEDGEMERE HYDRO, LLC.	LITTLE OSSIPEE RIVER	ME	450	4/17/1985	
601	03025	KELLEY'S FALLS	CONSOLIDATED HYDRO NH INC (CT)	PISCATAQUOG RIVER	NH	450	4/24/1984	3/31/2024
988	11566	DAMARISCOTTA MILLS	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	DAMARISCOTTA RIVER	ME	460	12/4/2003	11/30/2033
825	07888	COMTU FALLS	COMTU FALLS ASSOCIATES (VT)	LEE	VT	460	7/18/1986	6/30/2026
517	10172	NORTH TROY	LUPIEN, JOHN SR & JOHN LUPIEN JR	MUKHERJEE	VT	460	6/29/1989	
823	07883	WESTON	POWER HOUSE SYSTEMS INC (NH)	UPPER AMMONOOSUC RIVER	NH	474	10/15/1985	9/30/2025
596	03011	ARCTIC	NATCO PRODUCTS CORP (RI)	PAWTUXET RIVER	RI	478	1/25/1983	12/31/2022
758	06398	HACKETT MILLS	HACKETT MILLS HYDRO ASSOCIATES (MD)	LITTLE ANDROSCOGGIN RIVER	ME	485	9/12/1984	8/31/2024
191	05645	PUTNAM	PUTNAM HYDROPOWER INC (CT)	SUM	CT	500	7/6/1982	
368	02497	MT TOM MILL	HOLYOKE GAS & ELECTRIC CO.	MONAHAN	MA	500	6/29/1989	2/28/2021
513	02766	ALBION MILL (D WHEEL)	CITY OF HOLYOKE GAS & ELECTRIC DEPT	KAMARA	MA	500	6/29/1989	2/28/2021
517	02771	NONOTUCK MILL	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	500	6/29/1989	2/28/2021
792	07189	GREEN LAKE	GREEN LAKE WATER POWER CO (ME)	REEDS BROOK	ME	500	4/5/1984	3/31/2024
363	02490	TAFTSVILLE	CENTRAL VERMONT PUB SERV CORP (VT)	OTTAUQUECHEE RIVER	VT	500	9/20/1994	8/31/2024
738	05702	BARNET	BARNET HYDRO CO (VT)	STEVENS RIVER	VT	525	8/6/1982	7/31/2032
500	09826	BETHEL MILLS	BETHEL MILLS INC (NH)	WHITE RIVER	VT	525	9/17/1986	
977	11433	SANDY RIVER	TOWN OF MADISON, DEPT OF PUB WORKS	SANDY RIVER	ME	547	11/25/1997	10/31/2036
61	03444	ROCKY GORGE	ROCKY GORGE CORP (ME)	KAMARA	ME	550	8/9/1982	
570	11870	GOODRICH FALLS	GOODRICH FALLS HYDRO ELECTRIC CO.	Ellis River	NH	550	3/14/2002	
187	05613	BROWNS MILL	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	PISCATAQUIS RIVER	ME	594	8/3/1982	
731	05362	LOWER MOUSAM	KENNEBUNK LIGHT & POWER DIST (ME)	MOUSAM RIVER	ME	600	4/16/1982	3/31/2022
969	11313	APTHORP	CLARK, EDWARD M.	DEUBERT	NH	600	10/17/1995	9/30/2035
223	05985	SUNAPEE	SUNAPEE TOWN OF (NH)	SUGAR RIVER	NH	600	7/1/1982	
874	09282	PINE VALLEY	MACDONALD WINSLOW H	SOUHEGAN RIVER	NH	608	10/16/1987	9/30/2027
811	07410	PETERBOROUGH	AMERICAN HYDRO INC (PA)	NUBANUSIT BROOK	NH	623	8/15/1984	7/31/2034
634	03253	CAMPTON	MAD RIVER POWER ASSOCIATES (NH)	MAD RIVER	NH	639	11/9/1982	10/31/2022
32	02998	CENTENNIAL ISLAND	CENTENNIAL ISLAND HYDROELEC CO (MA)	CONCORD RIVER	MA	640	9/29/1981	
323	06950	FRANKLIN FALLS	FRANKLIN FALLS HYDRO ELEC CO (NH)	WINNIPESAUKEE RIVER	NH	660	1/20/1983	
63	03464	LISBON DAM	WHITE MOUNTAIN HYDROELEC CORP (NH)	DEUBERT	NH	675	3/8/1983	
193	05647	MIL0	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	SEBEC R	ME	695	2/23/1982	
581	12462	INDIAN RIVER POWER SUPPLY	INDIAN RIVER POWER SUPPLY, LLC.	WESTFIELD RIVER	MA	700	2/23/2006	
605	03037	ELIZABETH WEBBING MILLS	ROOSEVELT HYDROELECTRIC CO (RI)	KAYE	RI	700	7/13/1981	6/30/2021
306	02397	GAGE	CENTRAL VERMONT PUB SERV CORP (VT)	PASSUMPSIC RIVER	VT	700	12/8/1994	11/30/2034
308	02400	PASSUMPSIC	CENTRAL VERMONT PUB SERV CORP (VT)	PASSUMPSIC RIVER	VT	700	12/8/1994	11/30/2034
760	06440	LAKEPORT	LAKEPORT HYDROELECTRIC ASSOC'TS(NH)	WINNIPESAUKEE RIVER	NH	705	9/8/1983	8/31/2023
706	04718	COCHECO FALLS DAM	COCHECO FALLS ASSOCIATES (NH)	KAMARA	NH	714	12/8/1982	12/31/2022
819	07758	HOLYOKE NUMBER 4	HOLYOKE CITY OF (MA)	MONAHAN	MA	750	8/15/2006	8/31/2039
505	09968	AQUEDUCT TRANSFER	MASSACHUSETTS WATER RES AUTH (MA)	WESTON AQUEDUCT	MA	750	1/27/1987	
829	08047	WILLIMANTIC #2	WILLIMANTIC POWER CORP (VT)	WILLIMANTIC RIVER	CT	770	10/17/1985	9/30/2025
830	08051	WILLIMANTIC #1	WILLIMANTIC POWER CORP (VT)	WILLIMANTIC RIVER	CT	770	12/10/1985	11/30/2025
927	10806	STATION NO.5	CITY OF HOLYOKE GAS & ELECTRIC DEPT	MONAHAN	MA	790	6/29/1990	5/31/2030
989	11574	OCCUM	NORWICH CITY OF (CT)	SHETUCKET RIVER	CT	800	9/29/1999	8/31/2039
298	02387	HOLYOKE NO 2	HOLYOKE CITY OF (MA)	MONAHAN	MA	800	9/28/1988	8/31/2018
290	02367	AROOSTOOK RIVER	WPS NEW ENGLAND GENERATION, INC.	MILLINOCKET STREAM	ME	800	12/13/1993	12/31/2043
404	02555	AUTOMATIC	KENNEBEC WATER DISTRICT (ME)	MESSALONSKEE STREAM	ME	800	7/28/1999	6/30/2036
576	02932	MALLISON FALLS	S D WARREN CO (ME)	PRESUMPSCOT RIVER	ME	800	10/2/2003	9/30/2043
619	03131	BROCKWAYS MILLS	BROCKWAY MILLS, INC.	WILLIAMS RIVER	VT	803	1/20/1983	12/31/2032
848	08615	FISKE MILL	FISKE HYDRO INC (NY)	DEUBERT	NH	810	12/4/1985	11/30/2025
390	07791	ASHUELOT PAPER	HDI ASSOCIATES (CO)	DEUBERT	NH	810	7/31/1986	
418	08235	LOWER ROBERTSON DAM	HDI ASSOCIATES (CO)	DEUBERT	NH	810	7/31/1986	
762	06470	WINOOSKI 8	WINOOSKI HYDROELECTRIC CO (VT)	WINOOSKI RIVER	VT	810	8/29/1983	7/31/2023
611	03063	CENTRAL FALLS	BRUNER/COTT INC (MA)	KAYE	RI	818	8/28/1981	7/31/2021

FERC Issued Licenses and Exemptions in ISO-NE Control Area as of 8/5/2008

#	Project No.	Project Name	Licensee	Waterway	State	Authorized	Issuance	Expiration
						Capacity (KW)	Date	Date
553	11365	SWANS FALLS	SACO RIVER HYDRO, LLC	SACO RIVER	ME	820	7/31/1997	
306	06756	LOWER VALLEY	SWEETWATER HYDROELECTRIC INC (NH)	SUGAR RIVER	NH	860	11/9/1982	
349	07253	SEBEC	SEBEC HYDRO CO (ME)	SEBEC RIVER	ME	867	9/26/1983	
117	04413	KENNEBAGO	KENNEBAGO HYDRO CORP (ME)	KENNEBAGO RIVER	ME	900	7/17/1981	
946	10898	SWEETWATER	SWEETWATER HYDROELECTRIC INC (NH)	SUGAR RIVER	NH	900	3/28/1991	2/28/2031
720	05124	NORTH BRANCH NO 3	WASHINGTON ELECTRIC COOP INC (VT)	WINOOSKI RIVER	VT	933	11/23/1982	10/31/2022
449	02622	TURNERS FALLS	TURNERS FALLS HYDRO, LLC	MONAHAN	MA	937	6/29/1990	2/28/2021
655	03562	BARKER MILL UPPER	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	LITTLE ANDROSCOGGIN RIVER	ME	950	8/22/1983	7/31/2023
55	03265	STEELES POND	NEW HAMPSHIRE WATER RESOURCES (NH)	NORTH BRANCH OF CONTOOCOOK RIVER	NH	975	10/18/1983	
569	02905	ENOSBURG FALLS	ENOSBURG FALLS VILLAGE OF (VT)	MUKHERJEE	VT	975	7/12/1983	4/30/2023
533	02809	AMERICAN TISSUE	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	CROSS	ME	1,000	5/9/1979	4/30/2019
580	02941	LITTLE FALLS	S D WARREN CO (ME)	PRESUMPCOT RIVER	ME	1,000	10/2/2003	9/30/2043
683	04202	LOWELL TANNERY	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	PASSADUMKEAG R	ME	1,000	10/31/1983	9/30/2023
877	09340	KEZAR FALLS LOWER	KEZAR FALLS HYDRO, LLC.	OSSIPEE RIVER	ME	1,000	10/24/1990	9/30/2030
824	07887	MINNEWAWA	MARLBOROUGH HYDRO ASSOCIATES (NH)	MINNEWAWA BROOK	NH	1,000	7/14/1986	6/30/2026
377	07590	JACKSON MILLS	NASHUA HYDRO ASSOCIATES (MA)	NASHUA	NH	1,000	4/24/1984	
45	03128	LOCHMERE DAM	NEW HAMPSHIRE WATER RESOURCES (NH)	WINNIPESAUKEE RIVER	NH	1,030	3/15/1984	
979	11472	BURNHAM	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	SEBASTICOOK RIVER	ME	1,050	4/7/2004	10/31/2036
297	02386	HOLYOKE NO 1	HOLYOKE CITY OF (MA)	MONAHAN	MA	1,056	2/28/1989	1/31/2019
589	02972	WOONSOCKET FALLS	WOONSOCKET CITY OF (RI)	KAYE	RI	1,100	11/6/1980	10/31/2020
815	07528	CANAAN	PUBLIC SERVICE CO OF NH (NH)	DEUBERT	VT	1,100	8/24/1984	7/31/2009
530	02801	GLENDALE	LITTLEVILLE POWER CO INC (MA)	HOUSATONIC RIVER	MA	1,140	11/23/1979	10/31/2009
957	11163	SOUTH BERWICK	CONSOLIDATED HYDRO NH INC (CT)	SALMON FALLS RIVER	NH	1,200	12/9/1997	11/30/2037
235	06116	HOSIERY MILL	HILLSBOROUGH TOWN OF (NH)	HSU	NH	1,200	6/25/1982	
574	02928	MERRIMACK	MERRIMAC PAPER CO INC (MA)	SOUTH CANAL	MA	1,250	3/1/2001	2/28/2031
745	05944	MORETOWN NO 8	MORETOWN HYDRO ENERGY CO (MA)	MUKHERJEE	VT	1,250	12/7/1982	11/30/2022
112	04337	HOAGUE-SPRAGUE	CONSOLIDATED HYDRO NH INC (CT)	HSU	NH	1,268	3/11/1982	
693	04451	LOWER GREAT FALLS	SOMERSWORTH CITY OF (NH)	SALMON FALLS RIVER	NH	1,280	4/22/1982	4/30/2022
981	11482	MARCAL	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	LITTLE ANDROSCOGGIN RIVER	ME	1,310	7/17/1997	6/30/2037
140	04770	WELLS RIVER	WELLS RIVER HYDRO ASSOCIATES (MA)	WELLS RIVER	VT	1,318	10/9/1981	
564	02897	SACCARAPPA	S D WARREN CO (ME)	PRESUMPCOT RIVER	ME	1,350	10/2/2003	9/30/2043
865	09088	LOWER VILLAGE	LOWER VILLAGE HYDRO. ASSOC. LP (ME)	SUGAR RIVER	NH	1,350	9/10/1986	8/31/2026
437	02608	WEST SPRINGFIELD	A & D HYDRO INC (MA)	WESTFIELD RIVER	MA	1,400	10/24/1994	9/30/2034
818	07725	BARTON VILLAGE	BARTON VILLAGE INC (VT)	CLYDE RIVER	VT	1,400	6/9/2004	10/1/2043
362	02489	CAVENDISH	CENTRAL VERMONT PUB SERV CORP (VT)	LEE	VT	1,440	11/4/1994	10/31/2024
534	10675	DWIGHT	CONSOLIDATED EDISON ENERGY MASS, IN	MONAHAN	MA	1,464	9/11/1992	
843	08405	GLEN	MASCOMA HYDRO (NJ)	MASCOMA RIVER	NH	1,465	3/19/1987	2/28/2027
31	02986	TEXON HYDRO	LITTLEVILLE POWER CO INC (MA)	WESTFIELD RIVER	MA	1,500	5/11/1982	
278	06544	COLLINS	I MAXMAT CORP (MA)	MONAHAN	MA	1,500	2/9/1984	
291	02368	SQUA PAN	WPS NEW ENGLAND GENERATION, INC.	SQUA PAN STREAM	ME	1,500	12/4/1991	12/3/2021
532	02808	BARKER'S MILL	RIDGEWOOD MAINE HYDRO PARTNERS, L.P	LITTLE ANDROSCOGGIN RIVER	ME	1,500	2/23/1979	1/31/2019
617	03107	NEWFOUND	NEWFOUND HYDROELECTRIC CO (NH)	NEWFOUND RIVER	NH	1,500	11/6/1981	10/31/2031
664	03777	ROLLINSFORD	ROLLINSFORD TOWN OF (NH)	SALMON FALLS RIVER	NH	1,500	9/18/1981	8/31/2021
88	03984	SOUTH MILTON	SALMON FALLS RIVER HYDRO CORP (MA)	SALMON FALLS RIVER	NH	1,500	6/30/1981	
12	02488	BRADFORD	CENTRAL VERMONT PUB SERV CORP (VT)	WAITS RIVER	VT	1,500	9/29/1981	
948	11006	UPPER ANDROSCOGGIN	LEWISTON CITY OF (ME)	ATLAS	ME	1,695	2/26/1991	8/31/2026
44	03127	WARE UPPER	WARE RIVER POWER (MA)	WARE RIVER	MA	1,800	10/15/1981	
592	02984	EEL WEIR	S D WARREN CO (ME)	PRESUMPCOT RIVER	ME	1,800	3/16/1984	3/31/2004
495	02721	HOWLAND	PPL MAINE, LLC. (ME)	PISCATAQUIS RIVER	ME	1,875	9/12/1980	9/30/2000
18	02787	OTTAUQUECHEE WOOLEN MILL	OTTAUQUECHEE HYDRO COMPANY	OTTAUQUECHEE RIVER	VT	1,887	8/13/1982	
728	05313	DEWEY'S MILLS	HYDRO ENERGIES CORP (VT)	OTTAUQUECHEE RIVER	VT	1,898	1/20/1983	12/31/2032
575	02931	GAMBO	S D WARREN CO (ME)	PRESUMPCOT RIVER	ME	1,900	10/2/2003	9/30/2043

FERC Issued Licenses and Exemptions in ISO-NE Control Area as of 8/5/2008

#	Project No.	Project Name	Licensee	Waterway	State	Authorized	Issuance	Expiration
						Capacity (KW)	Date	Date
80	03760	STEVENS MILL DAM	FRANKLIN POWER,LLC.	WINNEPESAUKEE RIVER	NH	1,936	6/14/1983	
765	06597	MONADNOCK PAPER MILLS	MONADNOCK PAPER MILLS INC (NH)	HSU	NH	1,945	8/27/1984	7/31/2014
490	02712	STILLWATER	PPL MAINE, LLC. (ME)	STILLWATER BRANCH PENOBSCOT RIVER	ME	1,950	4/20/1998	3/31/2040
465	02662	SCOTLAND	FIRSTLIGHT HYDRO GENERATING CO.	SHETUCKET RIVER	CT	2,000	10/5/1982	8/31/2012
556	11412	DEER ISLAND	MASSACHUSETTS WATER RES AUTH (MA)	DEER ISLAND TREATMENT PLANT	MA	2,000	11/9/1993	
600	03023	TUPPERWARE	BLACKSTONE HYDRO INC (MD)	KAYE	RI	2,000	10/24/1980	9/30/2020
544	02839	GREAT FALLS	LYNDONVILLE VILLAGE OF (VT)	PASSUMPSIC RIVER	VT	2,050	6/29/1979	5/31/2019
242	02288	GORHAM	PUBLIC SERVICE CO OF NH (NH)	ATLAS	NH	2,150	8/1/1994	7/31/2024
717	05062	QUINEBAUG-FIVE MILE POND	QUINEBAUG PARTNERSHIP (CT)	QUINBAUG RIVER	CT	2,161	3/19/1987	2/28/2027
377	02519	NORTH GORHAM	FPL ENERGY MAINE HYDRO, LLC.	PRESUMPSICOT R	ME	2,190	11/22/1993	12/31/2034
330	02441	GREENVILLE/TENTH STREET	NORWICH CITY OF (CT)	SHETUCKET RIVER	CT	2,200	3/31/1993	12/31/2043
33	03051	EAST BARNET	CENTRAL VERMONT PUB SERV CORP (VT)	PASSUMPSIC RIVER	VT	2,200	5/11/1982	
666	03820	SOMERSWORTH	GENERAL ELECTRIC CO (NH)	SALMON FALLS RIVER	NH	2,220	9/29/1981	8/31/2021
504	02737	MIDDLEBURY LOWER	CENTRAL VERMONT PUB SERV CORP (VT)	OTTER CREEK	VT	2,250	8/1/2001	7/31/2031
488	02710	ORONO	PPL MAINE, LLC. (ME)	STILLWATER BRANCH PENOBSCOT RIVER	ME	2,332	12/8/2005	11/30/2045
328	06985	KINNEYTOWN	KINNEYTOWN HYDRO CO INC (CT)	SUM	CT	2,360	5/20/1983	
620	03133	ERROL	ERROL HYDROELECTRIC CO, LLC.	UMBAGOG LAKE	NH	2,381	8/29/1983	7/31/2023
581	02942	DUNDEE	S D WARREN CO (ME)	PRESUMPSICOT RIVER	ME	2,400	10/2/2003	9/30/2043
471	02674	VERGENNES	GREEN MOUNTAIN POWER CORP (VT)	OTTER CREEK	VT	2,400	7/30/1999	5/31/2029
276	06522	CHICOPEE	CHICOPEE CITY OF (MA)	MUKHERJEE	MA	2,500	12/8/1982	
588	02966	CLEMENT DAM	CLEMENT DAM HYDROELECTRIC,LLC	WINNIPESAUKE RIVER	NH	2,600	5/17/1982	4/30/2032
453	02631	WORONOCO	WORONOCO HYDRO, LLC	WESTFIELD RIVER	MA	2,700	4/30/2002	3/31/2042
76	03689	PAWTUCKET NUMBER 2	BLACKSTONE VALLEY ELECTRIC CO (RI)	KAYE	RI	2,710	7/21/1981	
51	03185	WEBSTER PEMBROKE	ALGONGUIN POWER INCOME FUND	SUNCOOK RIVER	NH	2,750	2/24/1983	
650	03472	WYRE-WYND	SUMMIT HYDROPOWER (CT)	SUM	CT	2,780	5/19/1982	4/30/2022
681	04117	COLEBROOK	METROPOLITAN DIST OF HARTFORD (CT)	WEST BRANCH FARMINGTON RIVER	CT	3,000	3/27/1984	2/28/2034
646	03442	MINE FALLS	MINE FALLS LTD PARTNERSHIP (ME)	NASHUA RIVER	NH	3,000	8/4/1983	7/31/2023
501	02731	WEYBRIDGE	CENTRAL VERMONT PUB SERV CORP (VT)	OTTER CREEK	VT	3,000	8/1/2001	7/31/2031
767	06689	PENACOOK UPPER FALLS	BRIAR-HYDRO ASSOCIATES (MA)	KAMARA	NH	3,020	12/5/1984	11/30/2024
320	02422	SAWMILL	GREAT LAKES HYDRO AMERICA, LLC.	ATLAS	NH	3,174	8/1/1994	7/31/2024
263	02326	CROSS	GREAT LAKES HYDRO AMERICA, LLC.	ATLAS	NH	3,220	8/1/1994	7/31/2024
108	04297	GOODMWN DAM	METROPOLITAN DIST OF HARTFORD (CT)	WEST BRANCH FARMINGTON RIVER	CT	3,294	9/30/1981	
538	10688	COSGROVE	MASSACHUSETTS WATER RES AUTH (MA)	WACHUSETT RESERVOIR	MA	3,400	1/19/1990	
467	02666	MEDWAY	PPL MAINE, LLC. (ME)	West Branch Penobscot River	ME	3,440	3/29/1999	3/31/2029
49	03180	GREGG'S FALLS	ALGONGUIN POWER INCOME FUND	PISCATAQUOG RIVER	NH	3,479	7/21/1983	
539	10689	OAKDALE	MASSACHUSETTS WATER RES AUTH (MA)	WACHUSETT RESERVOIR	MA	3,500	1/19/1990	
270	02334	GARDNERS FALLS	CONSOLIDATED EDISON ENERGY MASS, IN	MONAHAN	MA	3,580	4/4/1997	3/31/2037
537	10678	INDIAN ORCHARD	CONSOLIDATED EDISON ENERGY MASS, IN	CHICOPEE RIVER	MA	3,700	9/11/1992	
247	02300	SHELBURNE	GREAT LAKES HYDRO AMERICA, LLC.	ATLAS	NH	3,720	8/1/1994	7/31/2024
536	10677	PUTTS BRIDGE	CONSOLIDATED EDISON ENERGY MASS, IN	MONAHAN	MA	3,900	9/1/1992	
208	02194	BAR MILLS	FPL ENERGY MAINE HYDRO, LLC.	SACO RIVER	ME	4,000	5/11/1956	6/30/2005
535	02816	NORTH HARTLAND	NORTH HARTLAND,LLC	OTTAUQUECHEE RIVER	VT	4,000	11/24/1981	11/30/2021
640	03342	PENACOOK LOWER FALLS	BRIAR-HYDRO ASSOCIATES (MA)	KAMARA	NH	4,110	11/17/1982	10/31/2022
443	02615	BRASSUA	BRASSUA HYDROELECTRIC LTD PART (ME)	MOOSE RIVER	ME	4,180	9/16/1977	3/31/2012
632	03240	ROLFE CANAL	BRIAR-HYDRO ASSOCIATES (MA)	KAMARA	NH	4,283	12/5/1984	11/30/2024
718	05073	BENTON FALLS	BENTON FALLS ASSOCIATES (NY)	SEBASTICOOK	ME	4,468	3/8/1984	2/28/2034
535	10676	RED BRIDGE	CONSOLIDATED EDISON ENERGY MASS, IN	MONAHAN	MA	4,500	9/1/1992	
255	02311	GORHAM	GREAT LAKES HYDRO AMERICA, LLC.	ANDROSCOGGIN RIVER	NH	4,800	8/1/1994	7/31/2024
251	02306	CLYDE RIVER	GREAT BAY HYDRO CORP	CLYDE RIVER	VT	4,800	11/21/2003	10/31/2043
302	02392	GILMAN	DALTON HYDRO, LLC.	LEE	VT	4,850	4/13/1994	3/31/2024
408	08011	DODGE FALLS	DODGE FALLS ASSOCIATES L/P (DE)	DEUBERT	VT	5,000	6/1/1984	
						277,716		



# APPENDIX D

Date: April 17, 2007  
Time: 1:15 p.m.  
Room: State House Room 100

COPY

The Senate Committee on Energy, Environment and Economic Development held a hearing on the following:

HB 873-FN-L establishing minimum renewable standards for energy portfolios.

Members of Committee present:

- Senator Fuller Clark
- Senator Hassan
- Senator Cilley
- Senator Sgambati
- Senator Barnes
- Senator Odell

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Senator Martha Fuller Clark, D. 24: I'd like to have the attention of everyone here before I actually have Senator Hassan open the hearing on HB 873. We have allowed two hours for this bill. You will know that the House Committee had an all-day hearing on this legislation, at which the members heard overwhelming support for the RPS bill. So far, looking at our list, that no one has signed up in opposition to this bill. So when many of you might like to speak, it's really important that we bring this hearing to a close around quarter of three, if at all possible. So I really would encourage you, if you have written testimony, to hand it in; but we'd like to be able to move this bill forward.

And so I just wanted -- and the first part of the hearing testimony will be an explanation for the Committee members from both Joanne Morin, from the Department of DES, who has provided extraordinary leadership as we have shaped and reshaped and reshaped this legislation, and also then from Ross Gittell, who will provide the information that looks at the economic impact. And then, after, but we'll let the sponsors or co-sponsors to be able to speak first, just to open the hearing, and then we will call on other individuals. So just so that you have a sense of how we're going to proceed, I wanted to lay that out at the very beginning. And now I would like Senator Hassan to open the hearing.

rec.

WHEREUPON, the hearing was formally opened by Vice-Chair, Senator Margaret Hassan, who recognized Senate sponsor, Senator Martha Fuller Clark, to introduce the legislation.

Senator Martha Fuller Clark, D. 24: I'd like to ask Susan -- Suzanne Harvey to come up with me, since we are the lead sponsors in both the House and the Senate.

Senator Margaret Wood Hassan, D. 23: And I should have said the prime -- Senate sponsor; Representative Harvey is the prime sponsor. Thank you.

Senator Martha Fuller Clark, D. 24: Representative Harvey and I are here today to speak in favor of HS 873-FN-L. I wanted to let you know that the five other New England states have had a renewable portfolio standards legislation on their books for a number of years. There has been an effort in the past for New Hampshire to also provide such incentive as part of state policy. I believe that our current legislation, which has really been crafted after looking at the successes and strengths of the other RPS legislation, not only in New England but in New Jersey and New York, that this is an excellent piece of legislation, because there were fourteen months put into crafting this legislation and many, many meetings with a variety of stakeholders to bring forth a very complex bill that we have before you today.

I think it's important to understand that the purpose of the bill is to spur economic development, reduce our dependence on imported fuel, mitigate energy prices and supply volatility, and reduce air emissions from our energy supply. I also think it's important to realize that the credits, that they have been formulated in this bill are directed so that New Hampshire can take maximum advantages of the many renewable energy resources that are available in this state. And that was a key component as we moved forward in this bill.

As I said to you, we have had excellent input from the Department of Environmental Services. In moving this bill forward, I have had extraordinary education, as I'm sure Suzanne feels as well, about this whole initiative and how, um, and why it's so necessary that we bring it forward to you at this time. Certainly, we saw last year what happened with our over-dependence on natural gas and home-heating oil from foreign sources, and we had no, or very limited alternatives in place to address this. It also clearly fits it in with the Governor's plan to have us move our energy availability, in terms of generation, to come from "25 x 25" of renewable resources.

You will see at the end of the bill as amended in the House that there is a fiscal note attached to it, and I would just like to point out to you the

language in that fiscal note at the beginning ... on page 12, which says that: "The Public Utilities Commission and the Department of Environmental Services states that this bill may increase state, county and local expenditures by an indeterminable amount in FY2008 and each year thereafter." And whether or not this bill will have no fiscal impact on state and county and local revenues, the issue is that, that this bill will only begin to have a financial impact in the year 2010, more than likely, and so that currently there is no impact on the state budget.

You will have the opportunity to hear from Professor Gittell from the UNH Whittemore School of Business and Economics, that shows how a small short-term cost is part of this legislation. But the whole purpose is to position us in the long term to be able to have lower energy costs in this state. There is no perfect bill, and we recognize that there may be the need to review this legislation in the future and make some changes or adjustments, and you will see that there is language in the bill that calls upon the PUC to re-evaluate this program in the year 2013.

So, with that, I'm going to conclude my testimony and turn it over to Suzanne Harvey, Representative Harvey, who has done a most admirable job of shepherding this bill through the House. So, thank you very much, and thank you, Suzanne.

Representative Suzanne Harvey, Hills/21: Thank you, Madam Chair, members of the Committee. For the record, I'm Representative Suzanne Harvey from Hillsborough 21, which is Nashua's Ward 2. And I, without trying to repeat anything that the Senator said, I do want to point out that I think HB 873 and the RPS is one important piece, one part of the solution to New Hampshire's energy future. There's a lot of different parts that have to fall together before New Hampshire is really secure with its energy, but this is a big part of it. And to me, a vote to pass this RPS is a vote for clean, renewable energy in the Granite State; a vote for in-state economic development, and a vote for energy diversity and less dependence on imported fuels.

As the Senator said, we had hours and hours of stakeholder meetings over many, many months. And among the people who participated in that, including the sponsors and other representatives, we had representatives from the utilities, trade associations, renewable developers, energy suppliers and environmental groups, plus significant help from DES, the PUC, the Office of Energy Planning, and the Office of Consumer Advocate. So we had a real big cross-section of stakeholders from all different angles coming to say what they would like in the bill, every one was listened to, all input was

considered, and we looked at what was the best for the interests of the Granite State. It was truly a collaborative effort in the truest sense.

The House Science, Technology and Energy Committee, of which I am vice-chair, held a full-day hearing for the bill in Reps' Hall, where we heard overwhelming support for the bill. Especially in terms of a New Hampshire RPS; there wasn't anyone who spoke against having an RPS in the state. The Committee voted 14 to 1, Ought to Pass, and then the House passed it, 253 to 37, which we were all very, very pleased with.

And, also, since New Hampshire is the only state in New England not yet to have an RPS, we had the benefit of reviewing other states' RPS plans and looking at what was working, what wasn't working, and structuring our bill to try to make it as best as we can for the future, for now and the future. We also had the economic analysis which was a great help, and you'll hear more about that later.

The RPS, what is it? Simply stated, it requires the state's electricity providers to offer a specific percentage of their energy from renewable energy sources. And the providers qualify for RECs, or renewable energy certificates, for each megawatt hour generated from renewable sources. This is where we hope to see a big incentive to our existing renewable sources so that they can be players in the regional market, and also to incent newcomers to come develop renewable facilities in the state. This is a regional market program, administered by ISO-New England, which tracks each megawatt of energy generated onto the electrical grid and issues the certificate. The certificates can be sold to other entities that cannot meet their renewable requirement.

So our proposed RPS program starts at a baseline percentage of renewables required, starting in 2008, and goes out to 2025, going up in percent where we reach almost 24 percent of our energy coming from renewable. And by including a broad selection of renewable sources, such as wind, solar, geothermal, biomass, hydroelectric and others, as eligible for RECs, the New Hampshire RPS maximizes our natural resources, giving parity to our existing sources by incenting management to add incremental capacity. And, again, just as important, we hope this will encourage new projects to be built. Personally, I have been getting calls from people out of state, really interested in this and wondering what's happening with the bill.

In conclusion, I hope that you will support HB 873 and allow New Hampshire to join the regional RPS market and ensure that Granite-Staters will have the benefit of increased use of clean, renewable energy, will have good jobs coming with this, and tax revenue. Joining the House in its Ought-to-Pass

vote for the RPS is a vote for economic development, energy security and reduced dependence on imported fuels, a hedge against rising and volatile energy costs, and a reduction of greenhouse gas emissions in our state. Thank you.

Senator Margaret Wood Hassan, D. 23: Questions. Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Thank you, Madam Chair. The other New England states have this, is that correct?

Representative Suzanne Harvey: Yes.

Senator John S. Barnes, Jr., D. 17: Could you tell me what their build-out year is, what's ...

Representative Suzanne Harvey: Oh, I think each one is different. Every state customizes, number one, what they ... what they will accept as a renewable energy for credit, and also customizes the percentages, when they start and where they end, and at what year. So they're all different.

Senator John S. Barnes, Jr., D. 17: Thank you.

Senator Margaret Wood Hassan, D. 23: Any further questions. Seeing none, thank you both for your testimony.

Representative Suzanne Harvey: Thank you.

**(Please see written testimony of Representative Harvey attached hereto as Attachment #1.)**

Senator Margaret Wood Hassan, D. 23: And I think while they come back up, Joanne Morin and Bob Scott from DES.

Mr. Robert Scott, Director, Air Resources Division, NH Department of Environmental Services: Good morning -- ah, excuse me, good afternoon. My name is Bob Scott, I'm the director of the Air Resources Division with the New Hampshire Department of Environmental Services. I have some information being passed out, and, Senator Barnes, we have a graphic that shows exactly, I think, what you just asked that will answer your question directly.

Senator John S. Barnes, Jr., D. 17: Thank you very much.

Director Robert Scott: Very briefly, and again I know we're on a very quick time schedule here, so I'll try to hit some highlights that maybe haven't been hit as much on an RPS, Renewable Portfolio Standard. A couple things that I think you all know this from other hearings: obviously, New Hampshire is well placed for renewables, biomass, hydro, wind, tidal; there's a lot of things going on that can be, and should be, I think, the New Hampshire advantage. Fuel diversities, as you're aware, is a large concern in making sure we have a good energy portfolio. This goes towards that goal. Energy independence, which has been mentioned, is extremely important. Our estimate is that New Hampshire, in excess of \$500 million, or half a billion dollars a year, go outside or offshore for fossil fuels. That's a lot of money that could potentially be reinvested in the state with a program like Renewable Portfolio Standards. I want to pose that question.

Also, another good advantage, other than certainly -- and I apologize for not mentioning this, the Department of Environmental Services, clearly clean air, as the air director, is one of my goals, and this is what we think helps a lot in this direction. Also, on climate change. You've heard a lot about climate change; this is a real tangible thing we can do, right now, to help address climate change; renewable energy sources that are in this bill, all are climate-neutral, yet produce power rather than adding to the climate issue with greenhouse gases.

Similarly, this bill -- I have called it in the House an "insurance policy." Why I say that is, this is a hedge; the more renewable energy you have in your portfolio as a state, the less susceptible you are to changes in fossil fuels, whether it's foreign issues, whether it's a war or crises in other parts of the globe, or a natural disaster like a "Katrina." So I have characterized this in the past, and I think it still is a fitting characterization, that an RPS is like an insurance company (sic): yes, it will cost you something, just like an insurance policy does; but it also, the reason why you pay into an insurance policy is that you have a good feeling that you're going to save money in the long term by insuring against these type of fluctuations. And that's exactly what this does.

We do have UNH here, and Ross Gittell, and he'll elaborate on that. Briefly, again, I know this has been discussed, that the program itself would set a percentage of all power sold in New Hampshire would have to meet the standards for renewable energy, and this would ratchet up in time. Given that as power goes on the grid, it's a regional grid, and you can't know where this electron came from; there's a separate system called a "renewable energy credit," or a "REC" you'll hear discussed that is the commodity that's sold.

The New Hampshire version of this RPS -- again, there's 23 other states that have done this already -- looks at not only incentivizing new renewable projects, but the thought was to also make sure that existing renewable energy providers here in the state are viable, also. There didn't seem much sense in incenting new development if the old development doing the same thing goes away.

This is not a free ride. For biomass plants, and again, I can talk about air pollution, New Hampshire has strict particulate matter and NOx controls that are required in order to certify for the New Hampshire program. And, similarly, even for the hydroelectric facilities that qualify, there's requirements for fish ladders. So these are expenditures, and there's a requirement for these sources to go above and beyond what they normally perhaps would be required.

As I mentioned, the REC market is a regional market. And with that, other states, facilities in other states, may be able to qualify and purchase New Hampshire credits. Similarly, (indiscernible) right now, Whitefield Power & Light in Whitefield, New Hampshire, and the new Northern Wood Project in, at Portsmouth, the old Schiller Station, both are selling into other states' markets right now. But that's where, again, what we tried to do, this bill has by some been criticized being: gee, this is a little complicated. Well, one of the reasons is the bill attempts to strike a balance: on one level we want more renewable energy for all the reasons I just discussed; on the other hand, we want to direct as much as possible, keeping interstate commerce regulations in mind, to direct these same funds to New Hampshire where possible. So with that, we have different classes, different categories, and, yes, frankly, this complicates the bill a little bit, but the intention is to have New Hampshire money, as much as possible, go into New Hampshire facilities. And that's the balance. As a free-market economist -- and I won't speak for Ross Gittell who will speak soon here -- generally, they would say no barriers whatsoever and let the market do its thing. But there's the tension right there; and that's why the bill is a little bit more complicated than some might suggest.

To assure again, that we get the percentages right, how we do this right, as mentioned, there are three required review periods where the Public Utilities Commission is required to open a docket and look at the program and make sure it's doing what we expect it to do; make sure the percentages are correct, make sure the prices make sense for New Hampshire; the costs, if there are any, or the benefits. And that's required at three different times: 2011, 2018 and 2025; and they're required to make recommendations to the General Court. And it's our hope to be -- again, we know this is probably not perfect,

we want to move ahead; we spent a lot of time on this, and this is our hope to, okay, if we do need to make a correction, there's a mechanism in place.

A couple other minor points. A lot of the comments we received over the past two years while working on this type of bill include some comments that long-term purchase power agreements could be a benefit to the ratepayers, so in this bill there's not a requirement, but there's ability for the voluntary use of long-term contracts. So this is removing a potential regulatory barrier, letting those who wish to enter into these contracts do that. Again, it's not a requirement.

Similarly, there are many who have commented that thermal energy from renewable sources, where are they, where are they in this mix? We agree that's an important part of this; the concern is, however, that's a very complicated part of this, and so the response was to put in here extra language to require a study to look at that very thing. So, again, how much can you do in one bill. Those are some of the major comments that have been done.

As has been mentioned, this is going on two years' worth of effort. Last year there was SB 314 for a renewable portfolio bill; we literally had dozens of stakeholder organizations involved, all supporting this bill. So, in summary, again, I think not only-- clearly, again we're the environmental agency, this bill is good for the environment; it really can be good for the New Hampshire economy, and I think that's -- given the world situation, our energy situation, those are important considerations.

In the packages that you have, again, are our testimony letter; we also have handouts of the report that UNH worked at our request, looking at the economics of an RPS. In the House last year, one of the House members and committee, in committee, made the comment: gee, this is good, I'm hearing a lot of environmental and conservation groups saying RPS is good for New Hampshire, I'd really like an economist to tell me this is good for New Hampshire; and I said, you know, you're right. So over the summer we worked with UNH and he was able to do this study which he'll talk about soon.

Also in your handout is a -- in 2002 there was a study on the economics of Renewable Portfolio Standards in the low-grade wood products industry by Eric Kingsley, and I gave you just the executive summary, along with, on the bottom there's a web site, also, so if anybody wants to see the full report. But that also bears out that financially this makes sense for New Hampshire. And, finally, I've done most the talking, but Joanne Morin here on my staff has been the brains of the outfit, as has been mentioned, and certainly within

the constraints of time we have a handout with some of the highlights of the bill, again, kind of summarizing it, but we can answer any detailed questions that you have. I don't want to cut your questions short; I just want to move along for time. So, with that, I'll end my comments, but certainly we're here for questions. And, again, we would like to bring the UNH professors to talk about the economics.

Senator Martha Fuller Clark, D. 24: I do have a question for Joanne Morin, and that is, could you briefly share with us what were some of the changes that were made in the House amendment?

Ms. Joanne Morin, New Hampshire Department of Environmental Services: The changes that were made were that the percentage for new renewables was increased over time; the percentage had stopped at 2015, it was moved up a little bit sooner, I think by one year, and increasing out to 2025, balanced by PUC reviews to see how the cost of RECs are going and see if this working in the way we thought it would, economically, so that we feel we have sort of a mechanism if it doesn't work as predicted.

Other major, we did add two more PUC reviews as well; people really thought that was a good mechanism to keep tabs on the bill and be able to adjust it over time. The purchase power agreements are long-term contracts that Bob Scott mentioned. The provision to allow those on a voluntary basis was added to the bill. In the bill that was passed ...the bill that was passed last year out of the Senate Committee because it didn't get amended in the House, there were discussions of further amendments, a municipal solid waste was one of the qualifying renewable energy resources, and that is no longer in the bill, after House discussion.

There was some slight refining of the hydroelectric category, making sure that there's adequate fish passage and language to that effect. There was a slight modification to Class II on the solar replacement; it used to say replacement of electric hot water with either the solar or biomass renewable resources. We were supportive, actually, of having that, the biomass renewable resources for replacing electric hot water, but there was a problem with that in that there is, um, outdoor wood boilers are becoming an issue and may be an issue for the State, they're uncontrolled. Bob Scott can speak to it better than I can. DES has a concern with how we're going to regulate those, and this might have been interpreted to give actually an incentive to outdoor wood burners and we need to deal with that before we get this into this bill. So we needed to take it out for now, because of that potential, unintended consequence.

We adjusted the alternative compliance payments. As you know, how you comply with this bill is either by buying RECs on the market; if RECs are not available because of a maximum price, the electric supplier can pay into an alternative compliance payment; it's basically a price cap on this, it's very common in RPS bills. And we wanted to -- we're trying to make a regional market and so we just matched our payments for new renewables to the Massachusetts market to make them more fluid and joint regional market that seems to be driving the prices as the mass market. But those are very slight adjustments.

And then, Bob Scott also spoke to the thermal study committee, and the thermal energy is energy to produce heat, if you're not familiar with that term. So, wood-pellet stoves for heating is the part that we'd like to try to get some incentive on the thermal side; in other words, producing heat with renewables. This is an electric Renewable Portfolio Standard for that study committee. So those are the main changes.

Senator Martha Fuller Clark, D. 24: Are there other questions for either Bob Scott or Joanne Morin? Senator Odell.

Senator Bob Odell, D. 8: Thank you, Madam Chair. Tell me a little bit about the fish ladders, and how important that is, and ... whether or not we've addressed the right kind of fish and things in this, I've heard we might not have, and --

(Laughter.)

Ms. Joanne Morin: I'll try. We might have to defer to stakeholders. But the idea being that we were -- the concept behind it is to incent those hydroelectric facilities that are more at risk of not being able to compete economically because they have additional requirements or that they're just very small, so that the economics are more difficult. So, and also there's a push-and-pull on hydro; you know, you know, some people think any hydroelectric is very positive renewable energy. There are some that feel that there's an environmental tradeoff in terms of impacts to streams and fishways and fish and so forth.

So what this says is that the ones that would get this RPS additional incentive would be ones that actually have both fish ladders for wild fish to migrate up and downstream. The word that was used would include things like migrating eels as well as things like salmon that spawn upstream, as opposed to eels that live upstream and go to the ocean to breed. So it's trying to do joint, as I understand it, and a stakeholder may have to -- I'm not an expert, but that's I think the layman's explanation.

Director Robert Scott: "Dianadromous" (laughing).

Ms. Joanne Morin: Diana ..., yeah. Which would include both the eels and the salmon; in other words, both the eels that need to come down and the salmon that need to come up to spawn.

Director Robert Scott: So the language now allows free flow of fish going both ways, basically.

Ms. Joanne Morin: Both ways. So we believe these to be the most -- you know, that's a lot of investment for a small dam, and those to warrant an economic incentive.

Senator Martha Fuller Clark, D. 24: Yes, follow-up.

Senator Bob Odell, D. 8: How do we get to the five megawatts, we're talking about hydro; who's included or who's not included?

Ms. Joanne Morin: We looked at that, it includes a large -- I don't have the percentage off the top of my head; we did look at New Hampshire's facilities, we believe it includes a large percentage, you know, greater than three-quarters of the facilities in New Hampshire. There are some large facilities in New Hampshire that would not be included. And we also feel there is relatively smaller competition from the other states at that level, so that's one consideration. Kind of a little bit of a favoring New Hampshire facilities.

Is it a scientific number, five versus six or seven? No. I can't say that it is. A little bit more of a level of magnitude in terms of being a very small number that everyone was comfortable with that tried to bring in as many small hydro projects in New Hampshire.

Director Robert Scott: And, again, as I mentioned, we were trying to tailor this as much as possible to New Hampshire; that overall we're worried about -- there's a concern that perhaps Quebec Hydro plants could just -- we'd basically be sending all our money to Quebec, and we didn't think that was such a good idea, so we were setting a limit, basically.

Senator Bob Odell, D. 8: Thank you. Thank you, Madam Chair.

(Please see above-referenced NH Department of Environmental Services packet attached hereto as Attachment #2.)

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Senator Martha Fuller Clark, D. 24: You're very welcome. Additional questions from members of the Committee? Seeing none, thank you so very much. And before we go forward to hear from Ross Gittell, I would like to call on Alice Chamberlin from the Governor's Office, who has a time constraint.

Ms. Alice Chamberlin, Governor Lynch: Thank you very much, Madam Chair. Members of the Committee, my name is Alice Chamberlin, and I'm a special policy assistant to Governor Lynch. I'm pleased to read a letter of support today on his behalf for HB 873:

"Dear Chairperson Fuller Clark and Members of the Committee: Thank you for your consideration of HB 873 that will establish standards requiring the use of renewable energy resources by providers of electricity for sale in New Hampshire. Establishing a Renewable Portfolio Standard for New Hampshire is an important strategic and timely step toward a more secure and cleaner renewable power supply. New Hampshire must put in place an energy policy for the long term that will support sustainable, reliable and clean energy supplies that provide a hedge against the volatility of current and future energy markets.

"As you know, I have joined the national '25 x 25' initiative which calls for 25 percent of our energy consumed in 2025 to be generated from renewable resources. A Renewable Portfolio Standard is one important tool in reaching that goal. An RPS will provide incentives for new renewable generation and will support existing renewable generation. Steady demand for wood chips will help to support our logging communities, and greater fuel diversity will strengthen our energy independence. A New Hampshire RPS will encourage investment in energy production in New Hampshire that will deliver economic and environmental benefits to the state and the region.

"The development of a Renewable Portfolio Standard is a complex undertaking, and I applaud the efforts of the sponsors and the stakeholders who have worked hard to develop the RPS legislation. Extensive consultation and negotiation have produced legislation that puts New Hampshire on the path to a more sustainable and economic energy policy. If we want to secure a more stable, cleaner electricity supply for future generations, the time to act is now. I urge the Committee, and the Senate, to pass HB 873. Sincerely, John Lynch, Governor."

Thank you very much, and thank you for accommodating my schedule.

Senator Martha Fuller Clark, D. 24: Thank you very much. Are there questions for Alice Chamberlin?

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Ms. Alice Chamberlin: Thank you. I have copies for the Committee.

Senator Martha Fuller Clark, D. 24: Thank you.

(Please see written testimony of "Office of the Governor" attached hereto as Attachment #3.)

Senator Martha Fuller Clark, D. 24: I'd now like to ask Ross Gittell to come forward.

Dr. Ross Gittell, University of New Hampshire: I'm joined today by Matt Magnusson, who worked closely with me on the report, and we're prepared to answer questions. I've been asked to keep this testimony brief. We have a 90-page report that you have available to you. We testified for two hours in front of the House, so we'll try to summarize, but we'll be very happy to take any questions.

We were asked to do an economic impact analysis, both to quote the economic costs and benefits of RPS legislation in New Hampshire. I'm going to first provide you with an overview, and then Matt Magnusson will provide some of our key findings and quantify those findings. A Renewable Portfolio Standard in New Hampshire could help diversify the state's, and the region's, power-generating capacity and reduce our dependency on imported sources. It could also reduce our risk and volatility in energy costs, which is very much an economic plus. It could increase the potential for new renewable energy development across the state, and it could help economic development efforts, particularly in areas that have not benefited recently from the state's overall economic growth and activity. It could also reduce air pollution, including greenhouse gas emissions, and in this way help address climate change issues in the state. Those are the benefits.

There are also costs associated with RPS legislation. The costs, according to our modeling -- and we used different methodologies and feel strongly that our estimates are reasonable and will be reasonably accurate -- that the costs associated with the RPS are approximately two percent of an increase in the average household's costs by the year 2015 in their energy costs. However, that two percent increase, and the average energy cost per household, is relatively small compared to the other effects of RPS legislation. So we strongly believe that the net economic *and* environmental benefits from RPS will end up being positive for the state of New Hampshire.

Now Matt will go into some of the details on our modeling efforts.

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Mr. Matt Magnusson, University of New Hampshire: So one of the things we looked at was just what are the current retail electric costs in New Hampshire, and they're about \$1.4 billion. And we found that, with an RPS -- what we did was we used a methodology that several other RPS studies have done, basically looking at supply and demand for the renewable energy certificates. We looked at some studies that had made projections of what type of renewable resources could be developed in the region, and then looked at not only the New Hampshire RPS, but also the other state RPS to see how much demand there would be on those renewable resources. And by doing that, we were able to come up with some direct costs associated with an RPS.

And we found that in 2008 it will be about \$7 million, it would increase about a half a percent. So a residential household would see about an extra 33 cents a month. 2015, costs would go up to about \$30 million; that's an increase of about 1.8 percent, and the average residential household would be paying about \$1.17 more. And then by 2025 we actually found that costs are expected to go down, just because we would expect to see a lot more supply of renewable resources actually driving the cost of the RECs, and we actually found that to be about \$23 million by 2025. And those are all in 2006 dollars. So by 2025 we expect the average household to be paying an extra 65 cents.

Now, what we also looked at is, having alternative compliance payment, you could know what your worst-case scenario is, you know, what's the most that this could cost you if supply and demand don't match as we would expect it would happen. What we found is that in 2008 costs would increase by about .9 percent, and that means that if, really, all of the retail electricity suppliers in New Hampshire had to meet the alternative compliance payment. By 2015 they would increase by 4.4 percent, and by 2025, by about 8 percent. And to put that 8 percent in context, it would be about \$5.53 in 2025. However, with kind of the safeguards built into the bill of evaluating, it probably wouldn't be likely that you'd see that kind of increase without some changes to the legislation.

So what we looked at were some of the economic benefits, and we found that there will be about \$1 million in additional state revenue by 2025. And one of the benefits is that the region has a high dependence on natural gas, and by having more renewable energy resources replace that natural gas, that will actually serve to decrease costs in the region. We found that by 2010 these savings in natural gas would result in about \$300,000 reduction in electricity savings and about 5.6 million by 2025. So those aren't quite high enough to offset the direct RPS costs of RECs, but it certainly is helpful. And when we were actually doing that modeling we just looked at a base-case scenario of what's expected by the Department of Energy, and if costs for natural gas

were significantly higher, then it would even have further benefit for New Hampshire ratepayers.

We also found that there's certain firms in the area that have a higher-than-average concentration, such as logging, electronic component manufacturing, and these industries would benefit -- have a higher likelihood of benefiting from renewable energy development in New Hampshire. And we also found that existing renewable facilities in New Hampshire are significant contributors to the economy. In 2005 they employed 194 and paid about 13 million in annual wages. So we looked to see, based on the requirements from the RPS, what type of job development might New Hampshire see, and we would expect by 2010 to see about 450 new jobs, growing to about a thousand jobs by 2025. And do you have ...

Dr. Ross Gittell: I was going to summarize on the economic and job benefits. Based upon the discussion of this legislation, I've heard a lot of entrepreneurs and people interested in business development talking about this as a new area for economic opportunity, to start up businesses, to meet new market demand, and there's a lot of interest and excitement in the business community about this. So I think there is good potential; we do have the natural resources, we do have the potential. And then we had the supplier firms that Matt highlighted, like the logging industry and the wire and electronic industry, that are well-positioned to serve this market well, and the state could realize job benefits, job growth, and again, particularly in areas that haven't been experiencing significant job growth recently.

But as an economist, you have to look at the benefits and the costs. We highlighted some of the benefits, but there are also costs associated with this legislation. But offsetting those costs, there's an insurance policy that Bob Scott talked about, and the insurance policy includes that if -- we're less at risk if natural gas prices go up, and political and economic events globally that affect the price and availability of sources from outside the state, and building an internal capacity, internal renewable supply is to the state's long-term economic advantage.

So with that, that really summarizes what is an extensive 90-page report and two hours of testimony in the House. We'll be more than happy to take questions.

Senator Martha Fuller Clark, D. 24: Perhaps we're blessed.

(Laughter.)

Senator Martha Fuller Clark, D. 24: Yes. Senator Cilley.

Senator Jacalyn L. Cilley, D. 6: Thank you, Madam Chair. And nice to see you both again.

Dr. Ross Gittell: Yes, nice to see you.

Senator Jacalyn L. Cilley, D. 6: My question is, is the -- and I hope I frame this correctly -- is the market and the success of an RPS program driven in part, at least, by what is and is not included as a qualifying renewable? I noticed the condition in Connecticut, for example, where the RECs plummeted, if I understood that correctly, and they were using a portion of construction ... what do we call it, construction debris?

Several Voices: C&D.

Senator Jacalyn L. Cilley, D. 6: C&D? And some argue that there is a part of that that is renewable, that can be recycled; they took it out of their portfolio and that reduced supply, increased demand? Was that a political decision or -- there's sort of two questions in there.

Mr. Matt Magnusson: I mean, certainly ... that's one of the things that's really important, is to have these kind of definitions of classes and kind of stick to them, because if you're constantly changing them, it has a real significant impact. I mean, for Connecticut, they went from about \$45 a REC down to \$2 a REC because they changed the definition of renewable resource. So, you know, if you're a renewable energy developer, and you're counting on \$45 for a megawatt hour of electricity and instead you're only getting two, that's going to have a pretty significant impact. So that's one of the things to really be careful about, is when you're designing them, is to make sure that once you've kind of established them, be real careful about changing those definitions.

Dr. Ross Gittell: Yeah, and for planning and business development, it's hard to encourage investment in any particular technology if there's always the risk that the legislation could change and really change the returns, the potential returns on that investment. So keeping the requirements consistent, and also recognizing that it is a regional market, so as much as possible to be consistent, and hopefully, the other five New England states will keep consistency, because for investment, for long-term economic benefit, having that consistency would be helpful. Some of what you talked about, sort of changing the legislation at the margin, might not affect as much the overall economic benefits, but the distribution of those benefits across different industries, and creating opportunities for one type of renewable compared to another.

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Senator Jacalyn L. Cilley, D. 6: A quick follow-up.

Senator Martha Fuller Clark, D. 24: Certainly.

Senator Jacalyn L. Cilley, D. 6: So, is, is this bill, then, in terms of what we define as qualified renewables consistent with all of the other New England states at this point?

Mr. Matt Magnusson: I mean all the states are different, they all have -- you know, for example, you know Connecticut allows trash burning to qualify as new; I mean, Rhode Island has different definitions of what size hydropower qualifies, theirs are higher. Maine is very liberal in what they'll accept for their RPS. So I mean -- one of the things when we looked at the study was how do these, all these different RPS interact with each other, and that's how we came up with kind of our cost figures, based on the New Hampshire legislation, and looking at what's going on in the regional market, this is what we think the cost would be for New Hampshire.

Senator Jacalyn L. Cilley, D. 6: Thank you.

Senator Martha Fuller Clark, D. 24: Additional questions? Yes, Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Thank you, Madam Chairman. You mentioned in 2025 you estimate the cost to a household would be 65 cents, is that what I heard?

Mr. Matt Magnusson: Hm-mm.

Senator John S. Barnes, Jr., D. 17: Did I hear \$5.15 for businesses?

Mr. Matt Magnusson: No. Sorry, that was kind of a worst ... the 65 cents was based on our model and what we think the average household would save. If supply of new renewable doesn't come on line, for example, if enough facilities don't get developed, then ... retail electricity providers would need to do the alternative compliance payment, and if they're doing that, REC prices would be very high, and then the household would expect to see around a \$5.53 increase.

Dr. Ross Gittell: That's the absolute ceiling, but I think what Matt had suggested was that before that came to be, there would be a re-evaluation of the legislation and so we -- that's the absolute maximum, but we're very, very unlikely to see that absolute maximum.

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Senator Martha Fuller Clark, D. 24: Yes, Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Thank you. So what are your figures for business, businesses?

Mr. Matt Magnusson: What we did was we actually calculated out also a retail rate change, but basically, um, you could look at the percent change. So, for example, we think about an average two percent increase, so that business would be expected to see, too.

Senator John S. Barnes, Jr., D. 17: Two percent.

Mr. Matt Magnusson: Yes, somewhere around two percent.

Senator John S. Barnes, Jr., D. 17: Thank you very much.

Mr. Matt Magnusson: Yeah.

Senator Martha Fuller Clark, D. 24: Yes, Senator Odell.

Senator Bob Odell, D. 8: Thank you, Madam Chair. This same legislation went to the finance committee last year and came out with, stripped of any financial implications of this. You said two percent for businesses; two percent, when, would that ...

Mr. Matt Magnusson: Well, so, for example, in 2008 we'd expect for a business to see about a .5 percent increase; 2015, about a 1.8 percent; 2025, a 1.2 percent, over kind of a nonRPS scenario, so ... yeah.

Senator Bob Odell, D. 8: Okay. So the message of last year, if I may, was, you know, I have a constituent next door who's 85 years old who is living on Social Security, how can I go to her and ask her for this much money. And you're feeling comfortable with the ... return, or asking that person to pay 33 cents a month, is going to be overwhelmingly on the positive side.

Dr. Ross Gittel: What we were talking about for the average household, that 2015 increase would be about a dollar-seventeen, average per month, and that could be very small compared to what happens to the, you know, global-political situation; there's an increase on exported, you know, sources from outside that are imported in that we have absolutely no control over. This we have control over; we could tell you what the price increase is going to be, but I think that individual would have been subject to a greater price fluctuation just over the course of the last several years.

Senator Bob Odell, D. 8: I mentioned to the Chairman of the Committee that Thomas Freidman has an article in the magazine section --

Dr. Ross Gittell: Yes, sir.

Senator Bob Odell, D. 8: -- of the *The New York Times*, which if you ever needed anything to --

Dr. Ross Gittell: Yeah.

Senator Bob Odell, D. 8: -- support this legislation, he's certainly summed it up from everything from cost and international security and prevention of future wars, every impact. So thank you very much.

Senator Martha Fuller Clark, D. 24: I'd just like to say that it's my understanding that when we came forward last year with renewable energy portfolio, we did not -- we had not completed this analysis. Is that correct? This analysis was completed when?

Dr. Ross Gittell: This analysis was completed just recent... -- I mean, I don't have -- it was completed this summer, we did a lot of the work, and that's why it's actually current and draws upon those RPS in place in 23 other states, and so we were able to take sort of best methodologies and practices and apply it to the New Hampshire data and the current data, and so it was just recent, it's very timely, and I think there is, you know, a need to continue this type of analysis to understand in great detail the relationship between our environmental policies and also our future economy.

Senator Martha Fuller Clark, D. 24: Thank you. Senator Cilley.

Senator Jacalyn L. Cilley, D. 6: A final question, thank you, Madam Chair. In thinking about this, the modeling and being based on projections of supply and demand and so on, is there anything in this that would depress the interest in, encouragement of, conservation efforts? As you well know, at the federal-state level we don't have an aggressive conservation effort; if that changes ...

Dr. Ross Gittell: You could argue the, you know, the negative side of the two percent increase, you know, and that's going to affect people, you know, and businesses. But on the positive side of the increase is there's more incentive for energy efficiency. So there's some, you know, built in by sort of market price, that people are more incented to be energy-efficient. You could argue, and maybe this will be subject to future discussion, is that there

should be complementary policies to also encourage energy efficiency. But I don't think the energy efficiency issue really takes away any of the arguments that we highlight here with the economic cost and benefit. It's part of a, let's say, a portfolio of energy policies that I think we, as a state, should be considering at this point in time.

Mr. Matt Magnusson: Actually, a study by North Carolina looked at, you would have an energy-efficiency renewable energy class, meaning just, in the RPS, having energy efficiency qualify, for example, combine heat and power, not necessarily from a renewable resource, but they found that actually would lead to having no cost impact, it would decrease the cost of the RPS substantially, I guess, below what would be expected to ... the benefits would be greater than the cost by having an energy efficiency component. It kind of makes sense; if you're not using as much energy, you don't need to buy as many RECs, and that sort of thing.

Senator Jacalyn L. Cilley, D. 6: Thank you.

Senator Martha Fuller Clark, D. 24: Any further questions? Thank you very much, and I'd like especially to thank you for the excellent work that you did, and I know that you put in many hours and that there was a time frame within which we needed this report, and you met that, and I think it will be extremely beneficial as we go forward.

Dr. Ross Gittell: Thank you very much.

Mr. Matt Magnusson: Thanks.

Senator Martha Fuller Clark, D. 24: I'd like to call on Amy Ignatius from the Office of Energy and Planning. And then I will go the Reps. I'm sorry.

Ms. Amy Ignatius, Director, Office of Energy and Planning: Thank you very much. My name is Amy Ignatius. I'm the director of Office of Energy and Planning. And you have so many good speakers here today, I will not take up much time. I just wanted to state for the record that the Office of Energy and Planning is very supportive of this legislation and hopes that it is passed as it's currently written.

We've been participants in the many stakeholder forums, in working in meetings on definitions, trying to work through the details, which is a -- as you know, this is a complex issue and there's a lot to develop. Through the Session last year, a lot of wonderful work was done in bringing the stakeholders into a really strong working body, and I think the product this year that has gone fairly well, is really a sign that that effort has been

successful. And Joanne Morin from Environmental Services and her colleagues are really to be commended for the work that they've put in with Senator Fuller Clark and with Representative Harvey, in bringing us to this point. So we are very appreciative of it.

As you've heard before, and you will hear more, this is not a perfect bill, it doesn't answer every question, it doesn't make everyone happy; it is, in our view, a good balance. It tries to strike as good a set of give-and-take for everyone, and still accomplish the goals in a cost-effective manner. There may be changes that will be valuable in coming years, but I think the best thing to do is get it underway, have some experience of a couple of years, and then come back and look and see what possible changes would be appropriate. By that point we will have seen any difficulties in the bill, in the interpretation of it, that aren't apparent today. We will see more market development and understand better how the region is responding; we'll understand better how the RECs market has developed and what the interest is in the renewable community in investing in New England and in New Hampshire specifically.

So, I think rather than try to agonize over any more changes to the bill right now, I think it makes more sense to pass it as is, because we know it is sound, although perhaps not perfect; have some experience, and then, through these PUC-mandated reviews, we know that's a mechanism that's there already, nobody has to come back and ask for that, that that would be the opportunity to come back and adjust it if need be. A comment that you don't want to tinker too often, that Professor Gittell made, is a good one. These are markets we're trying to create, and one of the things that people need is certainty that it's not going to -- the rules aren't going to change on them all the time.

It's also government policy, and it's something that may need to be adjusted over time. So having some period of time before you come back and change it seems appropriate, but we shouldn't assume that we're locking ourselves in for all time. If it's not working, it's not working. If other changes happen in the region, we ought to know that, and it may require some change. It's even conceivable there will be a national RPS, which is something being discussed in Washington, and may end up being enacted in a few years, in which case you would want to make sure that you're participating in a national effort, if that would be more effective than having a state-specific one that gets in the way, or there may not even be the ability to have a state-specific one. So it's likely to change over the next few years, but I think that this makes sense to get on with it.

You've heard about, and you'll hear more, there are tremendous economic benefits, environmental benefits, benefits to the energy independence for the state, for the reliability of the state, it's the right way to go, and I hope it's passed. I'm happy to answer questions, if there are any.

Senator Martha Fuller Clark, D. 24: Thank you. Yes, Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Thank you, Madam Chair. Amy, what percent do we have now in renewable energy in the state?

Director Amy Ignatius: Senator, the current -- they measure renewable energy on what capacity is in the field, what's built, and how much is fueled by renewable resources, is one way to measure it, and another is on what you actually use and what's generated day to day. The capacity figures are, I think, about 14 percent of the state's capacity is fueled by renewable resources today. The vast majority, that is large hydropower, which is about 12 percent of the state's generation that's built, is fueled by hydropower; those large dams on the Connecticut River and some on the Merrimack and elsewhere. So you have about 12 percent of the state's capacity is hydropower; then you have some biomass, the wood-burning plants, a small amount of municipal solid waste, a very small amount of wind. I think that's about it.

Senator Martha Fuller Clark, D. 24: Yes, Senator Barnes.

Senator John S. Barnes, Jr., D. 17: What I'm trying to find out is -- thank you, Madam Chair -- what I'm trying to find out is, if we're shooting for 24 percent in '25? Or 2025. So what percent of that 24 percent are we at, without this and that, what's the number that we're at, of that 24 percent we're looking for?

Director Amy Ignatius: Well, that, actually, is a more complicated question, because the "25 x 25" standard is to say that 25 percent of the actual energy used in the state is generated from renewable resources, which is a little different than what's in the ground. You may have plants built, but they don't run all that often, and so the amount that you're actually generating and using may be different. So that's getting probably more complicated than you want. But if you're only looking at what the current percentage of the state's capacity is, it's about 14 percent of the total.

Senator John S. Barnes, Jr., D. 17: So we only have ten percent more to go.

Director Amy Ignatius: Well, I -- I'm afraid that's not true, I wish that were true. By the year twenty --

Senator John S. Barnes, Jr., D. 17: So we really don't have an answer for my question.

Director Amy Ignatius: We don't yet. Because the year 2025 -- by 2025 we don't know how much we're going to be using, that number, both the numerator and the denominator are going to go up.

Senator John S. Barnes, Jr., D. 17: Well, I see a number here, and I was kind of curious --

Director Amy Ignatius: And that's yet a different analysis of the amount of the load that should be purchased, or have certificates for renewables.

Senator John S. Barnes, Jr., D. 17: I'm sure you'll figure it out.

(Laughter.)

Senator Martha Fuller Clark, D. 24: Thank you. Are there -- yes, Senator Sgambati.

Senator Kathleen G. Sgambati, D. 4: Thank you. Do you have a sense, and sort of a reverse of Senator Barnes' question, of what the increase has been over the last ten years?

Director Amy Ignatius: That's a good question. How much has the percentage of renewable resources grown over the last ten years?

Senator Kathleen G. Sgambati, D. 4: No, just our overall energy demand.

Director Amy Ignatius: Oh. Ummm. Boy, I bet the utilities would be better at that. I think the estimate is growing at about a percent a year, in terms of the load. But we had a significant increase a few years ago as the state really ramped up in terms of population and economic development, you know, it drops up -- goes up and down. But I would think George Gantz, Donna Gamache, Don Kreis may have a better answer. And we can get that for you, if you'd like.

Senator Kathleen G. Sgambati, D. 4: Thank you.

(Pause.)

Director Amy Ignatius: It's very hot (laughing). It's hotter up here than it is back there.

rec.

(Laughter.)

Senator Martha Fuller Clark, D. 24: Other questions for Ms. Ignatius? Thank you very much.

Director Amy Ignatius: Thank you.

Senator Martha Fuller Clark, D. 24: And I'd like to thank you, also, for the time that you've spent and the expertise that you brought to the table as we working this bill to where it is today.

Director Amy Ignatius: Thank you.

Senator Martha Fuller Clark, D. 24: I'd like to call upon Representative Garrity.

Representative James Garrity, Rock/06: Thank you, Madam Chair, thank you, members. I'll be brief. I'm a co-sponsor of this bill. I'm also a member of the Science, Technology and Energy Committee over in the House, and I am the chairman of the State Energy Policy Commission.

And this is a great bill, it's been through a lot; it is rational, it's reasonable, it's done in a New Hampshire way, it's incremental, and I would urge you to pass it as you see it in this form, because the Senate has more important things to do this Session. And also I would urge the folks in the back, who have, you know their own stakeholder perspective, to put off the urge to pass, you know, fix the amendments here and there while they're in the Senate, and just kind of, let this become law. Let's take a good bill, put it into law, and see how it works. But I am strongly, strongly in favor of this bill, and I hope you would feel the same.

Senator Martha Fuller Clark, D. 24: I do have a question for Representative Garrity. I heard you say that we have more important things to do. Would you not agree that this is one of the most important bills that we could pass this year, in terms of legislative policy, give what we've seen with the volatility of energy prices in our state over the past year, year and a half?

Representative James Garrity: Oh, you bet it is. And, in fact, you know, I was kind of kidding around there, but it actually is a very important piece of the total New Hampshire energy puzzle, it's not the entire piece -- the entire puzzle, I mean, but we've got transportation fuels we need to address in the future, we've got demand response, we've got peak, we've got to build out our

rec

transmission infrastructure. But this is a very important piece. And it meets the goals of not only the Energy Policy Commission, but the Energy Planning Advisory Board and folks who have been studying energy in New Hampshire for a number of years.

Senator Martha Fuller Clark, D. 24: Thank you. Additional questions for Representative Garrity? Seeing none, I thank you very much for being available today and for all your help in shepherding it through the House.

Representative James Garrity: No problem. Thank you.

Senator Martha Fuller Clark, D. 24: I'd now like to call upon Representative Phinizy.

Representative James Phinizy, Sull/05: I'm glad I wore my tweed jacket in here, it's so chilling.

(Laughter.)

Representative James Phinizy: For the record, I'm Jay Phinizy -- thank you very much, Madam Chairman. For the record, I'm Jay Phinizy, and I represent Acworth, Charlestown and Langdon, Sullivan District 5. And I'm a co-sponsor of this bill and I support the bill wholeheartedly, with a couple of exceptions, and they're very minor, and I would like to point one of these out for you, and I'm sure you can make this technical correction, or we can look at it in the future.

As you know, I've always been very concerned that the definition of "biomass" and making sure that those sources of biomass that we choose to define would be what I would call clean -- the cleanest-possible fuel, for energy reasons. So if you go to your language in your definition, you will see very simply "biomass fuels means plant-derived fuel, including clean and untreated wood such as brush, stumps, lumber ends, trimmings, wood pallets, bark, wood chips or pellets, shavings, sawdust and slash, agricultural crops, biogas, or liquid fuels," none of which I have a problem. Then it says, "but shall exclude any materials ... in whole or in part, from construction and demolition debris," which I also agree with wholeheartedly and we will discuss that at another hearing, which I believe we have next week.

One thing I would like you to possibly do is make a very distinct reference to municipal waste combustion. And the reason I say that is if you go to, and you do reference in here specific language dealing with restructuring of deregulation, if you go to the 374-F's, you'll see 374-F, and please be patient, I'm trying to be as efficient as I possibly can so you can get out of here --

374-F:2 ... 374-F:2, I believe -- yes, :3. And it goes: "For the purposes of subparagraph (f) renewable energy ..." -- and bear in mind the bill that you and Representative Harvey co-sponsor speaks to renewable energy, and they speak to this statute -- it goes: "means geothermal, energy tidal, so on and so on and so on, and then it comes down to: "energy generated from bio-oil, bio-synthetic gas and bio-diesel as defined in RSA 362-A:1(a) and 1(b), or ..." -- and here's the problem I have -- "... or combusted municipal waste energy where mercury emissions are reduced by an emissions rate of .028 milligrams per dry standard cubic meter," blah-blah-blah-blah-blah, end paragraph.

And essentially what that does is that references the two municipal waste combusters, because those are the mercury emissions requirements for those two waste combusters. Those, to me, are existing electric-generation assets, and they do not represent what I would consider a renewable resource, and in their own right, while they may be generating electricity and burning municipal solid waste, they also help to, what I would call promulgate, or continue, what I call a problem where we aren't conserving and we aren't recycling, and we aren't reusing, and we're still relying on things like packaging in order to generate electricity.

So where you, in your language, in biomass, or we can certainly do it in my bill, which is still being held in the Science and Technology Committee, to specifically exclude municipal waste combustion, I would greatly appreciate that. And with that, I thank you very much, and I appreciate all the hard work both you and Suzanne Har... -- excuse me, Representative Harvey have done on this bill.

Senator Martha Fuller Clark, D. 24: Thank you very much. And I think it's been made clear in the modifications to this bill from last year to this year, that there is no intention to include municipal waste combustion, and we can certainly make that part of the record as well. Because we also realized that if we were to do that, that we would potentially be forced to take municipal waste combustion materials from other states as well as New Hampshire.

Representative James Phinizy: Precisely.

Senator Martha Fuller Clark, D. 24: And that could create a major imbalance in the overall intention of this legislation. What I would also hope is that perhaps you would be able to bring forward your amendment, or your language in the legislation that you're holding so that we can further clarify that. But certainly as part of the testimony here today, the testimony on the floor of the Senate will reflect the fact that there is no intention to open this up to municipal waste combustion.

Representative James Phinizy: Well, I would greatly appreciate, Senator, and with the Science and Technology Committee and with your help, should it get to the Senate next January, I'd be greatly pleased to use that as a basis to clarify that. And no pun intended, but we'll all breathe a little bit more easily.

Senator Martha Fuller Clark, D. 24: Thank you very much.

Representative James Phinizy: Thank you so much.

Senator Martha Fuller Clark, D. 24: Now, we have 20 minutes left, and we have about 12 speakers, all of whom would like to speak in favor of this bill. So, I would like to move this forward. I would hope that you could be as brief as possible, and if you don't really feel that you have to speak, that would also be useful so that we could leave some time for this Committee to discuss this legislation. The reason that we need to end this hearing by 3 o'clock is because three members of this Committee are on the Finance Committee and there is a public hearing in Reps' Hall with regard to the budget that begins at 3 o'clock. So thank you very much.

And with that, I would like to call upon William Klapproth from Concord Energy Policy. I hope I didn't mangle your name. "Klapproth."

Senator Margaret Wood Hassan, D. 23: And, Madam Chair, if I may, I think the temperature's just been adjusted, but I removed my suit jacket, so if anybody else out there would like to, I don't think any of us would mind.

Mr. William Klapproth, Concord Energy Policy Group: This bill, one of the major purposes is to control the greenhouse gasses. And I'd like to remind you that the rate of growth of the electricity in New Hampshire is forecast to be 2 percent, per year. And to the extent that the growth of renewables is less than the 2 percent, the RPS bill will not cut any greenhouse gas, it will only slow down the rate. The bill calls for a one and a half percent increase, up to average, but it's only one percent increase after 2011. But if that's what the compromise is necessary to get it passed, that's acceptable. But keep in mind that the 2 percent is what you need to keep from increasing still more the greenhouse gasses that are being emitted in New England, in New Hampshire. Thank you.

Senator Martha Fuller Clark, D. 24: Thank you very much. I would like to respond to your comment to say that we're hoping with a thermal RPS and also with increased policies that look at the area of energy efficiency and conservation, that we will be able to address through all those different

pathways to meet your concerns with regard to the one and a half, one percent.

Mr. William Klapproth: Then we would look forward to your passing a RGGI next year, to begin to cut down on the greenhouse gas.

(Please see written testimony of Concord Energy Policy Group attached hereto as Attachment #4.)

Senator Martha Fuller Clark, D. 24: Thank you very, very much. I didn't ask, were there other questions for Mr. Klapproth? Caroline -- Carolyn Demorest. New Hampshire Sustainable Energy Association.

Ms. Carolyn Demorest, New Hampshire Sustainable Energy Association: I have passed out written testimony. I just want to thank you so much for all the work you've done. We've got 1,500 people that would love to see this bill pass, and that's all I want to say.

(Please see written testimony of New Hampshire Sustainable Energy Association attached hereto as Attachment #5.)

Senator Martha Fuller Clark, D. 24: Thank you so very, very much. Donna Gamache from PSNH.

Ms. Donna Gamache, Public Service Company of New Hampshire: Thank you very much. My name is Donna Gamache, and I'm with Public Service of New Hampshire, and we are in support of HB 873. We thank the sponsors for allowing PSNH to have been a member of the stakeholders' group. We are also thankful to the sponsors for including our Northern Wood Power Project in Schiller Station as a new renewable resource. I'm going to cut my comments really brief, so I'm going to quickly flip through just to make sure I don't add more words for nothing. We're very much appreciative of that.

The reason that PSNH has been supportive of an RPS is twofold: because we recognize the severe need for -- actually more than twofold -- we recognize the severe need for additional generation in New England. But for us we also have to worry about how that need for generation, and how we deal with the need, from a public policy perspective, impacts our customers. And there's one real important reason for that, we're not saying that to be altruistic in any way.

But you may know that this Legislature enacted groundbreaking ... a new groundbreaking standard by which PSNH has to operate in 2003. Under RSA 369-B:3(a), PSNH is only allowed to continue to own its generation

assets if they provide value to customers. We have not been able to find any other utility, or business for that matter, in the nation where the Legislature has fully aligned the interests of customers and the utility. We take this very, very seriously. That's why you see us testifying on numerous energy issues before the Legislature.

And the reason for that is 'cause we try to ensure that public policy is implemented in a way that does not unnecessarily burden customers with additional costs that could have been avoided. So we know that there's a need for additional generation. We know that we, PSNH, are committed to environmentally friendly and renewable generation, and we know that our standard is required to keep costs low. If we put all that together, we know there's a need for an RPS.

Very briefly, I will say we have been consistent in our support for an RPS, but also we really hope that you will consider, in the future, the opportunity for PSNH to be able to contribute. We know the need is great, we hope that all the theories by UNH prove out to be true, that would be tremendous. But we do think that it's an aggressive RPS and the needs -- the RPS need to consolidate in New England is also very great, and we hope that we will have the opportunity in the future to be able to participate in that, and also try to keep costs low for customers. Thank you.

Senator Martha Fuller Clark, D. 24: Thank you very much. Could you tell us if you have considered, or are looking at, or is there the potential, with regard to the generating facilities that you already own, to repeat the success that you've had with the Schiller Plant on the Seacoast?

Ms. Donna Gamache: We would like to. We have not looked at it quite yet. We just got Schiller on line. What we said when we moved forward with Schiller, which went on line in December of this past year, what we said was we hope it is so successful that we continue to be able to do more and more of that. Our goal is to have far less dependence on fossil fuel. We just don't know, moving forward; we need a little more time to be able to make another case before the PUC.

Senator Martha Fuller Clark, D. 24: Thank you so very much.

Ms. Donna Gamache: Thank you.

Senator Martha Fuller Clark, D. 24: Are there questions for Ms. Gamache? Thank you. I would like to call upon Brian Kelly.

Mr. Brian Kelly, Noble Environmental Power: Thank you, Madam Chair, members of the Committee, for this opportunity. I'd like to congratulate the sponsors of this bill; it's a timely bill, very necessary for a whole number of reasons, and certainly to bring New Hampshire into the full light of this renewable energy debate. I represent Noble Environmental Power, we're a wind developer; we are interested in developing wind power in the state of New Hampshire. We have a number of plants under development in other states. I'm trying to be as brief as possible, to help you with the time. We very much support this bill. There is one issue I think that we have that I'd like to point out to the Committee, and we think the bill is ... a little easy. The renewable energy industry could do much better, and in fact I'll give you one or two snapshots from the papers that are being circulated to you now, which are your homework for tonight.

A 25 megawatt biomass plant, for example, largely a wood burner, could produce 185,000 RECs a year; that's more than the total required by 2010 under the bill. A 50 megawatt biomass plant could produce 372,000 RECs per year, and that's almost the total requirement by 2012. And at the moment I firmly believe that it would be possible to develop 300 megawatts of wind in Coos County within the next three to four years. So, you know, we could literally be what the bill expects to be in 2025, by 2015.

And I won't say anything else other than that the economic benefits to an RPS has been established by various analyses and reports, one of which has just been circulated to you. It largely pays for itself in terms of economic development and stabilization effects of electricity, so that the whole concept of an RPS, though, is well founded and well supported by economic analysis.

We have an instance in New York State which I will point out to you where we're developing three wind plants in Clinton County; the investment there is -- it's 280 megawatts, the investment will be about \$560 million. And our economists calculate that the benefits, ah, indirect local economic benefits over 20 years is in the order of \$361 million to the local community. So that's very significant.

And, again, I would urge the Committee to perhaps look at the targets and, if at all possible, to increase the targets. I know that this is perhaps quite a controversial challenge, but there is wonderful renewable energy resources in New Hampshire, and I believe that New Hampshire should go for it, because certain states in the country have, and they're making a big impact, like California. New Hampshire has a great opportunity, both in terms of economic benefits to the state itself, and to the environment.

And I'll just very quickly quote you one very simple calculation from high-school chemistry. When you burn one pound of carbon, coal, oil, gas, whatever it is, along with that pound of carbon you require two and two-thirds pounds of oxygen, it's taken out of the atmosphere and locked up in the carbon dioxide molecule forever. And that one pound of carbon, the two and two-thirds pounds of oxygen, produces three and two-thirds pounds of carbon dioxide. And if it's essential, if we're going to continue to inhabit this planet, that we reduce the carbon dioxide as much as possible, as quickly as possible. And I'd also like to say that I'm an advocate for every possible form of renewable energy, not just wind power, not withstanding that I work for a wind-power company. And with that, I thank the Committee for their time, and wish you ... the very best in making the best decision that you possibly can.

Senator Martha Fuller Clark, D. 24: Thank you very much. Questions? Yes, Senator Sgambati.

Senator Kathleen G. Sgambati, D. 4: I just have a quick question. Is there anything that you view in this bill as being a disincentive for a company to go faster than the standards that are --

Mr. Brian Kelly: The disincentive, I think, Senator, is purely that the bill doesn't go far enough. For example, as I said, if we build one 150 megawatt wood-fired plant, we would meet the requirements of this bill right through to 2015, and that, to an extent, would decrease the incentive for other developers to come into the area, to build other -- perhaps other biomass plants or hydro plants, or even wind plants. The problem there is that the, you know, the demand for RECs, for the RECs, would be taken up entirely, would be supplied entirely by the wood plant, and therefore the REC element of compensation, essentially, wouldn't be available to the other developers.

And in the same context, my own native state is Connecticut, and I think they produced one of the most regressive and regrettable pieces of legislation when they destroyed their REC program by allowing construction waste and municipal trash to be burned to generate RECs. I mean they have done more for atmospheric pollution with a stroke of a pen than the chemical industry did in 30 years. So I strongly ... advise that the State of New Hampshire produce a real REC program with real renewable energy, and avoid any further atmospheric emissions that can possibly be avoided.

Senator Kathleen G. Sgambati, D. 4: Thank you.

Mr. Brian Kelly: I hope that helps.

Senator Kathleen G. Sgambati, D. 4: It does.

Senator Martha Fuller Clark, D. 24: Doug Patch?

Mr. Brian Kelly: Thank you.

(Please see written testimony of Noble Environmental Power attached hereto as Attachment #6.)

Mr. Doug Patch, TransCanada: Madam Chair, my name is Doug Patch; I'm with the law firm of Orr & Reno. And TransCanada supports the bill. TransCanada owns the large hydropower facilities on the Connecticut River. And I have written testimony I can leave with you. Thank you.

(Please see written testimony of TransCanada attached hereto as Attachment #7.)

Senator Martha Fuller Clark, D. 24: Thank you very much. Philip Bryce (sic) from DRED. "Bryce," I'm sorry. Phil Bryce.

Mr. Phil Bryce, NH Department of Resources and Economic Development: I have written testimony in support from Commissioner George Bald, and I will withdraw my request to speak.

Senator Margaret Wood Hassan, D. 23: Thank you.

Senator Martha Fuller Clark, D. 24: Thank you.

(Please see written testimony of Department of Resources and Economic Development attached hereto as Attachment #8.)

Senator Martha Fuller Clark, D. 24: Erika Staaf from Environment New Hampshire.

Ms. Erika Staaf, Environment New Hampshire: I also have written testimony, and will withdraw my request to speak.

Senator Margaret Wood Hassan, D. 23: Thank you.

Senator Martha Fuller Clark, D. 24: And you are in support of the legislation, as is?

Ms. Erika Staaf: Yes. As is.

Senator Martha Fuller Clark, D. 24: Thank you very much.

Ms. Erika Staaf: Thank you.

(Please see written testimony of Environment New Hampshire attached hereto as Attachment #9.)

Senator Martha Fuller Clark, D. 24: Joshua Levine, from Tamarack Energy.

(Pause; distribution of documentation.)

Mr. Joshua Levine, North Country Renewable Energy, Tamarack Energy: Well, Madam Chair and fellow Committee members, I was passing around written testimony. My name is Josh Levine. I represent North Country Renewable Energy. We are a renewable energy developer that is putting together a biomass facility in Northern New Hampshire, specifically in Groveton. And I've actually attached a brochure on the project to the back of my testimony, so I won't spend any of your time on that.

North Country Renewable Energy is a project company put together by Tamarack Energy and its partner, XGenesys Development Corporation. I represent Tamarack Energy. We've been involved in the RPS stakeholder process for quite awhile, working with DES and others in helping to draft this legislation. We are strongly in support of this legislation. We think that this is the right thing for New Hampshire and will help encourage the development of renewable energy within this state.

However, as we believe the current version is a good piece of legislation, it may not go far enough in helping New Hampshire achieve its goal of having 25 percent of its energy come from renewable energy sources by 2025. We believe that the minimum RPS percentages for Class I renewables, at the top of page four, on lines 1 through 5, should be increased to meet the desire of HB 873, to encourage meaningful levels of development of new renewable energy generation.

I'd like to just quickly run through a couple of calculations. If we supposed that New Hampshire retail electricity sales will be approximately 12.4 million megawatt hours in 2009, then approximately 62,000 megawatt hours would be required to come from Class I renewable sources. To put this into perspective, if all this generation were to come exclusively from new biomass facilities, it would equal the output of just one 9 megawatt facility. In 2010, if it came from all new biomass, it would be equal to one 20 megawatt facility.

The stories aren't any better if we focus on wind energy development. In 2009, all the Class I requirements could be fulfilled by one 24 megawatt wind energy facility, which incidentally, this is the exact size of the Lempster wind energy facility which is to be developed in Southwest New Hampshire, which could be operational in 2009.

Take a look at the back of my testimony. I've put a table in here, laying out some of the megawatts demanded by the current percentages. And as you can see, there's clearly a very real possibility of the flooding of the New Hampshire RPS market to occur, just as we've seen in the Connecticut market which basically was flooded by the addition of two biomass facilities, one from New Hampshire, and one from Maine, and that's all it took for it to be basically collapsed for a year or more. It's coming back now, but it's taken awhile.

Combine this with the fact that more than just biomass facilities could meet the Class I requirements and there's a high likelihood that the proposed RPS legislation would not have a desired outcome of encouraging new renewable energy development and helping New Hampshire meet its goal of "25 x 25." And I'm stating this, as I said, I believe is a great piece of legislation that's been worked on for numerous hours and for, actually, multiple years now. However, I wanted to make sure that the Committee understood that the legislation right now is incenting a small amount of new renewable energy generation. And I just would like to point that out and hope that that helps the Committee in evaluating this piece of legislation.

In closing, I would like to reiterate that it's a very important bill for energy developers such as ourself and our proposed project in Groveton, and we are very much in support of the passage of the bill. With all due respect to the drafters of the bill and the stakeholder process, we would respectfully encourage this Committee to review the percentages contained within the legislation and to increase them to a level that would have a tangible impact on the development of renewable energy projects in the next couple of years, versus waiting for nearly another decade to encourage significant generation.

I'd like to thank the bill's sponsors and the stakeholders for all their hard work, and for giving North Country Renewable Energy the opportunity to testify in front of you today. If there are any questions, I'd be happy to take them now. Yes.

Senator Martha Fuller Clark, D. 24: I have a question which, as you know and you've referred to here, that we do have the opportunity to review the percentages in 2013. My sense is that, knowing the amount of time that it

rec

will take to go through the permit process and to bring various projects on line, do you believe that if those percentages were to be increased in 2013, that that would have a negative impact or have a positive impact? And I would understand from your testimony that you believe that we need to do that sooner, but I'm just asking you if, in order to really have a sense of this going forward, what would be the impact of upping those percentages in 2013?

Mr. Joshua Levine: I believe that if we re-evaluate them at the assigned time that's in the legislation, that that will be helpful, that's going to be a positive impact. My concern, and what I'll point out, is that I fear that this legislation will not have a significant impact for the first couple of years that it's in place. And especially considering that there's already a 50 megawatt biomass facility which will be put in as a new facility that's already operating today, and that will be taking up a significant amount of RECs, or has the opportunity to. There's a wind energy project already that's fairly far along in its development process that will have the ability. And my feeling is that if we understand that these facilities are out there today, that we should think about, you know, trying to change it so it will have some impact in the first years.

Senator Martha Fuller Clark, D. 24: Thank you. Are there additional questions? Yes, Senator Sgambati.

Senator Kathleen G. Sgambati, D. 4: In your projection of future energy needs, --

Mr. Joshua Levine: Yes.

Senator Kathleen G. Sgambati, D. 4: -- was there any inclusion in that formula of demand management going forward?

Mr. Joshua Levine: I did not, and I'll recognize it was a very simple analysis where I took the stated amount of electricity that was sold in 2005, I looked at what it had grown in past years, which was roughly somewhere between two and two and a half percent, and I just extrapolated it for future years.

Senator Kathleen G. Sgambati, D. 4: Thank you.

Mr. Joshua Levine: So I did not take that into account.

Senator Martha Fuller Clark, D. 24: Thank you. I have another question, and that is, obviously we're playing in a regional market, --

rec

Mr. Joshua Levine: Yes.

Senator Martha Fuller Clark, D. 24: -- so there are other RPSs in other states; did you take that into consideration as well?

Mr. Joshua Levine: No, what I've looked at is solely what the New Hampshire RPS itself would, would require, and so I have not. And I guess my feeling about it, you're exactly right, that the situation is complicated because it is a regional market, and my feeling is that if we could have each individual state create a robust program, that will make it a regionally robust program. So ...

Senator Martha Fuller Clark, D. 24: Thank you.

Mr. Joshua Levine: Thank you.

Senator Martha Fuller Clark, D. 24:

(Please see written testimony of North Country Renewable Energy attached hereto as Attachment #10, and brochure, "Groveton Renewable Energy Park," as Attachment #10-A.)

Senator Martha Fuller Clark, D. 24: Jasen Stock, from the New Hampshire Timberland Owners Association.

Mr. Jasen Stock, New Hampshire Timberland Owners Association: Good afternoon. I'm Jasen Stock from New Hampshire Timber Owners Association. I will -- I brought copies of my testimony that I presented to the House Science and Technology Committee. It worked there, I think, it was, I think persua... -- helped be persuasive there; hopefully, you'll find it also enlightening. I also did bring a copy, and Bob Scott referenced a report done on the economics of biomass that DRED did, by Erick Kingsley, and I brought copies of that as well.

Senator Martha Fuller Clark, D. 24: Thank you.

Mr. Jasen Stock: Real quick, as I know we're pressed for time. Our interest in this bill is specifically biomass. We see this bill as really the intersection of a utility policy with natural resource management. We're strongly supportive of it. Included in my testimony you'll see some photos of a timber sale that was completed down in Greenfield where biomass was used as a management tool, and a project description. In this instance, it's clear; it's a great example of where the landowner was able to utilize this

market to capture value out of some low-grade wood that they would not have been able to otherwise, and also achieve some wildlife management objectives as well. When we looked at biomass and the biomass market, we look at it in terms of adding value to timber, which we hope in the long term encourages more people to keep their land as forest, and we also look at it as a management tool.

The other piece of this is, and you've heard a lot about the economic development and the fact that this puts dollars into our rural economies; that's important. We also see the thermal component also being important. In our association we have a number of members who are utilizing biomasses for thermal energy. Concord Steam, who's actually heating this building, quite effectively today, but --

(Laughter.)

Mr. Jasen Stock: -- they're using wood chips, they use wood chips or biomass to heat downtown. And so there's -- it achieves the broader policy objectives and it's a great way to utilize a locally grown natural resource.

We'll be available to answer any questions, and I appreciate your time.

Senator Martha Fuller Clark, D. 24: And we appreciate your input and thank you for being here today.

Mr. Jasen Stock: Thank you.

(Please see written testimony of New Hampshire Timberland Owners Association and attached photos attached hereto as Attachment #11.)

(Also please see NH Timberland Owners Association submission, "Executive Summary, Phase III: Markets for Low-Grade and Underutilized Wood in New Hampshire," hereto attached as Attachment #12.)

Senator Martha Fuller Clark, D. 24: Questions from anyone on the Committee? Okay. Heidi Kroll?

Ms. Heidi Kroll, National Grid: Good afternoon, Madam Chair, and members of the Committee. My name is Heidi Kroll. I'm with Gallagher, Callahan and Gartrell, and I'm here today on behalf of National Grid, which is also sometimes referred to as Granite State Electric Company; it serves approximately 41,000 customers in New Hampshire.

I will be very brief. We are in support of the bill as it currently stands. National Grid does support Renewable Portfolio Standard policies. The committee (sic) feels that it's a very important additional tool to add to other tools that customers have, namely, energy efficiency programs which the company has been very committed to, is very committed to working with customers to help them manage their energy bills and mitigate price volatility.

There are two aspects of the bill that are of particular importance to the company that we're supportive of the way it's currently drafted. One has to do with reference to the default service charge and recovering compliance costs with the RPS through that charge. I think the company, and other stakeholders, agreed and recognized that compliance costs are a supply-related cost. And for National Grid, who's out of the generation business and purchases all of its electricity needs on the competitive market, it recovers prudently incurred costs through that default service charge, and so this legislation recognizes that RPS compliance costs should also be recovered there.

And then the other provision that's of importance to National Grid, and we support the way it's currently drafted, is the long-term contracting language, or the multi-year contracting language which is written as being voluntary, and the company supports that. It gives companies, the customers and other stakeholders flexibility in not mandating anything that could potentially have unintended consequences.

Senator Martha Fuller Clark, D. 24: Thank you very much.

Ms. Heidi Kroll: So with that, I will wrap it up.

(Please see written testimony of National Grid hereto attached as Attachment #13.)

Senator Martha Fuller Clark, D. 24: Questions for Ms. Kroll? Thank you. Jonathan Winer. Granite State Hydro Association.

Mr. Jonathan Winer, Granite State Hydropower Association: Thank you, Madam Chair. My name is Jonathan Winer, on behalf of the --

Senator Martha Fuller Clark, D. 24: "Winer," I'm sorry.

Mr. Jonathan Winer: That's fine -- Granite State Hydropower Association. Very briefly, in light of the clock, we support the bill as drafted. What we ask

is that the discussion that was, I think Senator Odell prompted earlier with regard to types of fish passageways that qualify, we address that in our written comments, request that somehow, if you agree, become part of legislative record, to show the types of fish passageways.

As you might expect, the industry has very diverse situations and nuances, and the legislation as we worked on it with the House committee, attempts to reflect that, and we believe the language is clear, but we think some additional demarcation by the Senate would be useful.

Senator Martha Fuller Clark, D. 24: Thank you very much. Any questions? Yes.

Senator Bob Odell, D. 8: Thank you. I have a constituent who uses the term, "substandard fish facilities" merely to become eligible for the RPS benefit? Are we -- are the five megawatt, the low people, basically okay in this legislation?

Mr. Jonathan Winer: Yes, I think that point you're making is the point I was trying to address, quickly, which was that there are various types of fish passageways, and if the comments that we offered in writing are agreeable to the Committee, then if those are adopted as the intent, I think the issue of "substandard" will go away.

Senator Bob Odell, D. 8: Okay. Thank you.

Mr. Jonathan Winer: That's our concern as well. Thank you very much.

(Please see Granite State Hydropower Association letter of testimony attached hereto as Attachment #14.)

Senator Martha Fuller Clark, D. 24: Thank you very much. I'd like to call upon Maura Weston.

Ms. Maura Weston, Ridgewood Power Management: Good afternoon, Madam Chair and members of the Committee. I will try to be as brief as possible, and I'll follow up with written testimony for the Committee members. My name is Maura Weston. I'm here today on behalf of Ridgewood Power Management. Bill Short from Ridgewood intended to be today, but was called away for a family emergency, so I'm going to be delivering these remarks.

Ridgewood owns, operates, manages and develops renewable electricity-generating facilities, including biomass, landfill gas and hydroelectric

facilities located in New England and around the country. Ridgewood conditionally supports the enactment of this RPS legislation. We believe that the passage of an effective RPS is in the best interest of the citizens of New Hampshire. However, we believe that certain modifications should be made to the bill as drafted for it truly to be an effective policy.

Ridgewood's position is that only if the RPS provides offsetting benefit to the burdens imposed on New Hampshire ratepayers, will this act truly be effective. We would make a few recommendations which I will walk you through very briefly, and will follow with more detail in writing. First, Ridgewood would like to study or permit, through legislation, future time of day, time of your locational pricing of renewable energy certificate, qualified for the RPS. This is a concept that other states are looking at, it is moving forward in Rhode Island. The concept here is that the environmental value of renewable energy varies over the course of the day, year and its location. I would suggest some language giving more credit to those certificates from facilities located in New Hampshire which generate their energy on peak and on season, would be beneficial policy.

Second, we suggest limiting pipeline, upgraded landfill gas from qualifying for the New Hampshire RPS. The concern here is over-supply. As written, the proposed statute would permit any landfill gas upgraded to pipeline grade, natural gas, anywhere in North America to qualify as methane gas, (indiscernible) for combustion in any generation unit in the New England control area. Assuming that the facility is qualified for New Hampshire RPS, this generation could easily overcome the need for new, truly renewable generation in New Hampshire.

Additionally, we would recommend limiting the size of Class I, incremental hydroelectric production, to five megawatts of capacity or less. Again, the concern here is the over supply. As written, the proposed statute would permit any large hydro expansions to qualify its production for the New Hampshire RPS. Under NAFTA, this would include any hydro expansions proposed at existing dam sites in Canada, of which we understand there are several in the planning stages.

Additionally, moving on, we would recommend eliminating the Class III requirement. The concern here is that Class III may never be filled with any renewable energy. All of the proposed generation, according to our analysis, in this class would also satisfy Connecticut's RPS definition of Class I renewable energy. The Connecticut RPS has not only a higher alternative compliance price of \$55 than to New Hampshire's 28, but by 2010 will be nearly three times the requirement of New Hampshire's Class III.

An example of this feature is currently the Whitefield Power and Turnkey Landfill, both are New Hampshire renewable generators, as well as Class I Connecticut resources. So our fear is that Class III may, will most likely never be satisfied by renewable generation, but rather, New Hampshire utilities will be making ACP payments. And our fear here is cost could exceed benefit.

Moving to Class IV, as written, the proposed Class IV requirement will either be satisfied by existing dams less than five megawatts with appropriate fish passage, or will be satisfied shortly after the passage of the New Hampshire RPS. This requirement could easily be satisfied and we believe would not offer significant long-term relief to owners of such facilities. We believe that this was verified in the UNH costs study as well. And no other New England states, to our knowledge, has made such an attempt to support such a limited class of generation, of which its ratepayers will clearly pay the total costs, but may never reap the benefits.

Lastly, we'd encourage a dialogue between the PUC and the Legislature. I know that there's been a great dialogue, but continue that dialogue. We would like for the PUC to consider including as part of the regulatory process the possibility of adding renewable technologies to the RPS without amending the statute. We believe that the area of renewable energy is expanding, new technologies may be developed, and it may be prudent to take this up in the regulatory process.

In conclusion, we would appreciate consideration of these points. Again, we look forward to working with the Committee, to providing you with more detail, and working to ensure that this is an effective RPS for the state of New Hampshire. Thank you very much.

Senator Martha Fuller Clark, D. 24: I have a question for you. Were these issues raised before the House?

Ms. Maura Weston: Yes, they were.

Senator Martha Fuller Clark, D. 24: And were these issues raised --

Ms. Maura Weston: Excuse me, I, Senator ...

Senator Martha Fuller Clark, D. 24: -- in the discussions with the stakeholders as we were moving forward?

Ms. Maura Weston: I should correct myself. Some of these issues were certainly raised in the House, and some of them were certainly raised in the

discussions with the stakeholders. I believe that there are a couple of the points that I raised which are points that we're now raising, given changes in the environmental circumstances. And, again, I can clarify that in writing for you.

Senator Martha Fuller Clark, D. 24: Thank you. Are there additional questions for Ms. Weston? Thank you.

Ms. Maura Weston: Thank you very much.

Senator Martha Fuller Clark, D. 24: Andrew Edwards, is my last ... is he here? I would like to say that the following people did not wish to speak, but signed up in favor of the bill: Bill Gabler, from the Forest & Paper Association; Senator Bragdon; Charlie Levesque, from New Energy Capital; George Gantz, from Unutil; Jim Rubens, from the Union of Concerned Scientists; Sandi Hennequin, with Constellation Energy. So, thank you --

Senator Margaret Wood Hassan, D. 23: I think they may have wanted to speak, that's why I'm ...

Senator Martha Fuller Clark, D. 24: Is there anyone here who wanted to speak and didn't have a chance to speak?

Senator Margaret Wood Hassan, D. 23: Sandi.

Ms. Sandi Hennequin: I did.

Senator Martha Fuller Clark, D. 24: Okay. Sandi, you didn't check that you wanted to speak, sorry. Or I would have called on you.

Ms. Sandi Hennequin, Constellation Energy: I'll be very, very brief. Again, my name is Sandi Hennequin, and I'm a director of regulatory and legislative affairs at Constellation Energy. And we're here in support of the bill. We've been active in the stakeholder process, we think this is a very good bill. We do have a few cautionary statements that we made when we testified in front of the House on Section 8, the Purchased Power Agreement section, and in interest of time, we'll send a letter to the Committee just highlighting those cautionary statements that we would want you to be aware of as this bill moves forward and becomes law.

But other than that, in summary, we're very supportive of this bill; we think there's been excellent leadership, both from my State Senator, Senator Fuller Clark, from Representative Harvey, from Joanne Morin, and all of the stakeholders who have worked on this for the past 14 months, and we're

pleased that New Hampshire is going to join the -- hopefully, it's going to be joining the other New England states with an RPS. I'd be happy to answer any questions.

Senator Martha Fuller Clark, D. 24: In reference to your cautionary remarks, do you still feel that it's appropriate for this bill to go forward?

Ms. Sandi Hennequin: Yes. Yes. There were two clarifications that were made in the House on this section; one, that any ... anything that we procured through the tool of the long-term contracts wouldn't be more than the RPS percentage requirement, and any costs associated with this would be recovered through the default service charge. That gave us the comfort that we needed. We had a few comments as the PUC would consider any docket on, or any requests, such as, you know, what the term would be, what products, what would be the capacity; those were the type of comments that we were going to submit following up. But, yes, we are supportive of this bill.

**(Please see posthearing submission of written testimony of Constellation Energy attached hereto as Attachment #15.)**

Senator Martha Fuller Clark, D. 24: Thank you very much. Are there additional questions? Thank you. I would like to ask Joanne Morin to come back, very briefly, and perhaps you could comment on one or two, because of the issues that were raised, because we have worked so very diligently to try to craft a balanced percentage program as we move forward, and I know some questions were raised around that.

Senator Margaret Wood Hassan, D. 23: I think three of us have to go and come back to exec. I don't know --

Senator John S. Barnes, Jr., D. 17: Four of us are leaving.

Senator Martha Fuller Clark, D. 24: Okay. Could you just wait a minute or two, to hear from Joanne?

Senator Margaret Wood Hassan, D. 23: Okay. They just opened upstairs, and they're waiting for us.

Senator Martha Fuller Clark, D. 24: I understand that.

Senator Margaret Wood Hassan, D. 23: Okay, go ahead.

Ms. Joanne Morin: I'll just make a few brief points. If you want more, -- in terms of the increasing the percentages, UNH did look at the supply and

demand for new renewables, and you have to look at the regional demand for that percentage. So it's not going to be any time soon that a renewable plant would be built, but the RECs wouldn't have a place to sell them. So that regional demand is, is much higher than supply, and it's going to be for awhile. So whether New Hampshire RECs are satisfied, you have to look at it regionally. That was the main point. And the other points on some of the comments from Ridgewood Power, we've tried to balance all the interests, we've done the best we can. It can always be modified. There are pros and cons to everything, and it's a balance.

Senator Martha Fuller Clark, D. 24: Thank you very much.

Senator Margaret Wood Hassan, D. 23: Thank you.

Senator Martha Fuller Clark, D. 24: Thank you very much. Yes, Senator Sgambati.

Senator Kathleen G. Sgambati, D. 4: Quick question: is there anything that you heard in the concerns that have been raised that couldn't be addressed in the future, or that would change the nature of how this would go forward?

Ms. Joanne Morin: I think we can -- we can address them in a number of ways. The review, the first review from the PUC is actually in 2011, and that would come up as 2013. So we have a review quite rapidly. There's also PUC rulemaking, some aspects of the hydro concerns on interpretation, to make sure it's interpreted as intended, can be done through PUC rulemaking. So I think we have those areas where we need to address anything, but no substantive changes to the bill.

Senator Kathleen G. Sgambati, D. 4: Thank you.

Senator Martha Fuller Clark, D. 24: Thank you. I need to just check with you. I can find out if I can schedule a special executive session for early on Friday, or would you feel comfortable in going forward with this bill now?

Senator John S. Barnes, Jr., D. 17: I'd like to move we go into executive session, if you'll close the hearing.

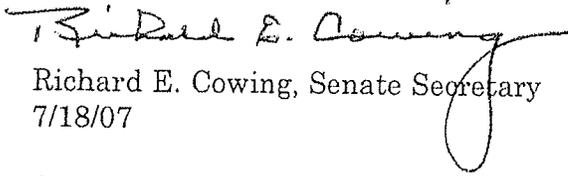
Senator Martha Fuller Clark, D. 24: I will close the hearing.

(Hearing closed at 3:05 p.m.)

see

(Please see Construction Materials Recycling Association  
posthearing submission attached hereto as Submission A.)

Respectfully submitted,

  
Richard E. Cowing, Senate Secretary  
7/18/07

Attachments: 15  
Submissions: 1

HB 873  
Rep. Suzanne Harvey  
Hillsborough 21 (Nashua Ward 2)

COPY

HB 873 is one important piece of the solution to New Hampshire's energy future. A vote to pass a renewable portfolio standard, or RPS, is a vote for clean renewable energy in the Granite State, a vote for in-state economic development, a vote for energy diversity and less dependence on imported fuels.

I'd like to offer a brief overview of an RPS and the essence of the program laid out in HB 873. I'll leave it to Joanne Morin from DES to provide the details and hope you'll save any technical questions for her.

But first, I think it's important to remind you that Sen. Fuller Clark brought the bill to the Senate in the last session, and it has since been through many, many hours of meetings with the state's energy stakeholders.

In addition to this year's bill sponsors, stakeholder meeting attendees included representatives from the \*utilities, \*trade associations, \*renewable developers, \*energy suppliers, and \*environmental groups----plus \*DES, the \*PUC, the \*Office of Energy Planning, and the \*Office of Consumer Advocate.

All input was considered and weighed against the best interests of New Hampshire. It was truly a collaborative effort.

The House Science, Technology & Energy Committee held a full-day hearing for HB 873 in Reps Hall where we heard overwhelming support for a NH RPS, voted 14-1 ought-to-pass, and then the House passed it 253-37.

Since NH is the only state in New England to *not* have an RPS, we had the benefit of reviewing the RPS programs in the region, learning from their mistakes, and looking at what's working.

In addition, this year we had the benefit of an independent economic analysis from Prof. Ross Gitell and Matt Magnusson, an MBA at UNH. The analysis is very favorable to our RPS and suggests that the long-term benefits are good for New Hampshire's economy.

What is a renewable portfolio standard, or RPS? Simply stated, it requires the state's electricity providers to offer a specific percentage of their energy from renewable energy sources. Providers qualify for renewable energy certificates, or RECs, for each megawatt hour generated from renewable sources.

This is a regional market program administered by ISO-New England, which tracks each megawatt of energy generated onto the electrical grid and issues the

certificates, which can be sold to other entities that cannot meet their renewable requirements.

Our proposed RPS program specifies the required percentage of energy from renewable sources from a baseline percent in 2008 and increasing over time until a final percentage goal is achieved in 2025-----(almost 24%).

By including a broad selection of renewable sources--such as wind, solar, geothermal, biomass, hydroelectric, and others-- as eligible for New Hampshire RECs, the NH RPS maximizes our natural resources, giving *parity* to our existing sources by incenting management to add *incremental* capacity.

And just as, if not more, important, the program also encourages new projects to be built in the state -- because with the passage and signing of this bill, NH would then be a player in the regional RPS market. With our healthy resources of wind and wood, for example, this could incent developers and investors to build new facilities right in our state—and with that come good jobs and tax revenue.

In conclusion, I hope you will support HB 873 and allow NH to join the regional RPS market and ensure that Granite Staters will have the benefit of increased use of clean, renewable energy.

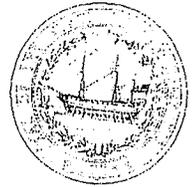
Joining the House in its ought-to-pass vote for the NH RPS is a vote for economic development in our state, energy security and reduced dependence on imported fuels, a hedge against rising and volatile energy costs, and a reduction in greenhouse gas emissions in our state.

Thank you.





The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



Thomas S. Burack, Commissioner

April 17, 2007

COPY

The Honorable Martha Fuller Clark, Chairman  
 Senate Energy, Environment and Economic Development Committee  
 Legislative Office Building, Room 102  
 Concord, NH 03301

Re: HB 873 relative to establishing minimum renewable standards for energy portfolios

Dear Chairman Fuller Clark and Members of the Committee:

The Department of Environmental Services (DES) is pleased to testify in support of House Bill 873, which establishes minimum renewable energy standards for energy portfolios, also commonly referred to as a renewable portfolio standard (RPS). The RPS is a flexible, market-driven policy that can ensure that the environmental and other public benefits of wind, solar, biomass, geothermal energy and other renewable resources continue to be recognized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving the state and, by increasing the required amount over time, the RPS can put the electricity industry on a path toward increasing sustainability. Because it is a market standard, the RPS relies almost entirely on the private market for its implementation. Market implementation will result in competition, efficiency, and innovation that will deliver renewable energy at the lowest possible cost. Currently there are 23 states plus the District of Columbia that have RPS policies in place. Together these states account for more than 42% of the electricity sales in the United States.

An RPS requires each supplier of electricity (i.e., Public Service Company of New Hampshire, Unitil, National Grid, and New Hampshire Electric Cooperative) to obtain renewable energy certificates for a certain percentage of the power (measured in megawatt hours, MWhrs) that they ultimately supply to customers. Each renewable energy certificate (REC) represents one MWh (or 1,000 kilowatt hours) of power generation from a renewable energy source such as biomass or wind. RECs for renewable electric energy meeting New Hampshire RPS requirements would be recorded, on behalf of the State, by the administrator of the Independent System Operator (ISO) for New England and tracked in the ISO Generation Information System (GIS), which is used to document the renewable attributes of electrical generation in New England. The ISO GIS currently fulfills similar administrative functions for renewable energy generated for RPS in all other New England states.

The University of New Hampshire's Whittemore School of Business and Economics recently conducted an analysis (the UNH study) of the impact of the proposed bill on New Hampshire ratepayers and the economy. The UNH study concluded that although there would be modest costs incurred in the short term, overall there would be a net positive economic and environmental benefit. A New Hampshire RPS would also provide a hedge against the price volatility of natural gas and other sources of energy price volatility, help diversify the State's power generation, reduce dependency on imported sources of fuel, increase the potential for new renewable energy development within the State, and help facilitate the efficient use of existing

DES Web site: [www.des.nh.gov](http://www.des.nh.gov)

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

Telephone: (603) 271-1370 • Fax: (603) 271-1381 • TDD Access: Relay NH 1-800-735-2964

renewable energy resources. The UNH study forecasts the creation of 1,100 new full-time jobs and the generation of \$1 million in state revenue annually in 2025 as a result of this bill. The UNH model demonstrates that New Hampshire ratepayers would likely see less than a 2% increase in rates, or less than \$1.25 per month per household. However, this projection does not account for any potential reduction in regional energy prices as a result of reduced demand for natural gas (and modulation of price volatility) due to the development of local renewable energy resources.

Implementing a renewable portfolio standard for New Hampshire is good energy policy, as it makes sense both economically and environmentally. Renewable resources reduce emissions of greenhouse gases contributing to climate change as well as other forms of air pollution such as particulate matter and sulfur dioxide. An RPS will contribute to long term energy price stability, expand energy sources, create new energy technology jobs, and improve economic development in New Hampshire while reducing reliance on imported energy and avoiding associated price spikes. An RPS will also create incentives for renewable energy infrastructure investment, thus helping to promote investment in development of new renewable energy facilities in New Hampshire. This legislation, through the market signals it sends, will also begin the process of creating a long term energy "insurance policy" for New Hampshire energy ratepayers.

The proposed bill represents an extensive stakeholder process that began last session with Senate Bill 314 and continued into this year's legislative session. Stakeholders included electric utilities, renewable energy producers (hydroelectric, solar, biomass, etc.), environmental interests, and implementing regulatory agencies. DES believes the current bill language strikes a reasonable compromise which all stakeholders can support. This was evident during the seven hours of testimony supporting the bill received by the House Science, Energy and Technology Committee. An RPS provides a competitive environment for less polluting renewable resources, sends a market signal to investors in renewable energy projects, and safeguards long term energy rates.

DES looks forward to continuing to work with the sponsors and supporters of this bill to motivate development of renewable energy resources in New Hampshire and the region. Thank you for the opportunity to provide testimony. Should you have further questions or need additional information, please feel free to contact Robert R. Scott, Director, Air Resources Division (271-1088, [rscott@des.state.nh.us](mailto:rscott@des.state.nh.us)) or Joanne Morin, Program Administrator (271-5552, [jmorin@des.state.nh.us](mailto:jmorin@des.state.nh.us)).

Sincerely,



Thomas S. Burack  
Commissioner

cc: HB 873 sponsors



JOHN H. LYNCH  
Governor

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COPY

April 17, 2007

The Honorable Martha Fuller Clark, Chairperson  
Committee on Energy, Environment and Economic Development  
New Hampshire Senate  
State House, Room 100  
Concord, NH 03301

Re: HB 873, establishing minimum renewable standards for energy portfolios.

Dear Chairperson Fuller Clark and Members of the Committee:

Thank you for your consideration of HB 873 that will establish standards requiring the use of renewable energy resources by providers of electricity for sale in New Hampshire.

Establishing a Renewable Portfolio Standard (RPS) for New Hampshire is an important strategic and timely step toward a more secure and cleaner renewable power supply. New Hampshire must put in place an energy policy for the long term that will support sustainable, reliable and clean energy supplies that provide a hedge against the volatility of current and future energy markets.

As you know, I have joined the national "25 x 25" initiative, which calls for 25 percent of our energy consumed in 2025 to be generated from renewable resources. A renewable portfolio standard is one important tool in reaching that goal. An RPS will provide incentives for new renewable generation and will support existing renewable generation. Steady demand for wood chips will help to support our logging communities. And greater fuel diversity will strengthen our energy independence. A New Hampshire RPS will encourage investment in energy production in New Hampshire that will deliver economic and environmental benefits to the state and the region.

The development of a Renewable Portfolio Standard is a complex undertaking, and I applaud the efforts of the sponsors and the stakeholders who have worked to develop the RPS legislation. Extensive consultation and negotiation have produced legislation that puts New Hampshire on the path to a more sustainable and economic energy policy.

If we want to secure a more stable, cleaner electricity supply for future generations, the time to act is now. I urge the committee and the Senate to pass HB 873.

Sincerely,

John H. Lynch  
Governor

GRANITE STATE HYDROPOWER ASSOCIATION, INC.

TWO COMMERCIAL STREET  
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April 17, 2007

COPY

Senator Martha Fuller Clark, Chairwoman  
Senator Margaret W. Hassan, Vice Chairwoman  
Senate Energy, Environment and Economic Development Committee  
State House  
107 North Main Street  
Concord, NH 03301

Re: HB 873-FN – Electric Renewable Portfolio Standard

Dear Chairwoman Fuller Clark, Vice Chairwoman Hassan, and Members of the Committee:

On behalf of The Granite State Hydropower Association ("GSHA"), thank you for the opportunity to comment in support of HB 873, the Electric Renewable Portfolio Standard ("RPS") legislation that you are now considering. As you may recall, GSHA is a non-profit trade association that represents approximately 45 New Hampshire hydroelectric facilities which have a total installed capacity of approximately 50 MW.

GSHA supports the legislation in its present form. Below, we highlight a topic concerning existing hydroelectric facilities on which we request that the Committee confirm the legislative intent; we also offer a brief explanation of the importance of this legislation to our members.

Intent of Class IV Language (362-F:4)

The Committee will note that there are a number of requirements for a hydroelectric project to meet in order to be classified within Class IV in HB 873. These are that:

- (i) "the source began operation prior to January 1, 2006";
- (ii) the "gross nameplate capacity" of the project is "5 MWs or less";
- (iii) the project "has installed upstream and downstream dianadromous [sic] fish passages that have been required and approved under the terms of its license or exemption from the Federal Energy Regulatory Commission"; and
- (iv) the project "when required, has documented applicable state water quality

\_\_\_\_\_ PRODUCING ELECTRICITY FROM A RENEWABLE RESOURCE. \_\_\_\_\_

certification pursuant to section 401 of the Clean Water Act.”

GSHA thinks that requirements (i), (ii) and (iv) are clear and straightforward. However, requirement (iii) warrants two comments on changes made during the concluding meetings of the House Science, Technology and Energy Committee concerning this proposed legislation.

First, the word “diadromous” is misspelled and should be changed. This was a technical drafting error.

Second, the future administration of the RPS will benefit to the extent the legislative intent of requirement (iii) is clear.

The goal of limiting eligibility to hydroelectric projects with both upstream and downstream fish passages is to recognize that projects with such facilities have gone to great capital expense and incur meaningful operating costs by virtue of supporting the migration of fish. Importantly, stakeholder discussions regarding the significant capital and operating costs of certain fish passages focused on fish passages designed to facilitate the upstream migration of salmon, shad, herring, and other “anadromous” fish.

In the course of its review, GSHA learned that some small projects in New York State have upstream and downstream fish passages designed solely for eels. Although the eel passages at those projects are relatively inexpensive to install and operate, the projects would have qualified under the Class IV definition, as originally drafted. To correct the problem, at GSHA’s request, the House Committee changed the referenced definition concerning fish passages to read: “. . . has installed upstream and downstream diadromous fish passages that have been required . . . .” By adding the word “diadromous,” the projects that will potentially benefit from Class IV eligibility will be as the stakeholders and the Bill’s sponsors intended, i.e. those that went to the substantial expense of installing at least anadromous fish passages.

In summary, it is GSHA’s understanding that the Legislature intends the Class IV definition in HB 873 to apply to any hydroelectric project which has been required to and has provided, at a minimum, upstream and downstream anadromous fish passages, and, in the event that catadromous fish passages also happen to be required by the regulatory agencies, then the project must also have upstream and downstream catadromous fish passages. Conversely, if a project has fish passages only for catadromous fish but not for anadromous fish, then the project will not qualify.

### Importance of Legislation

GSHA owners and operators face a challenging scenario. On the one hand, there is growing public policy recognition of the value of emission-free, indigenous energy resources that can be priced in a stable manner. On the other hand, increasing numbers of GSHA projects are no longer covered by firm contracts and face the volatile wholesale electric energy market. In addition, most of the GSHA projects are approximately 20 years old and are incurring increased maintenance costs. Some projects face costly required upgrades for fishway and other improvements.

These issues are present even though hydroelectric projects have no fuel cost. This is because the absence of fuel costs is more than offset by hydro project capital costs and increasing unit maintenance costs. Further, the proper operation of small hydro projects can be labor intensive per unit of output. This combination of factors produces marginal economics at some sites. Thus, the inclusion of certain existing hydroelectric facilities in proposed RPS Class IV is important financially and sends a meaningful signal to owners of eligible facilities which can make a contribution to the policy goals of the RPS legislation.

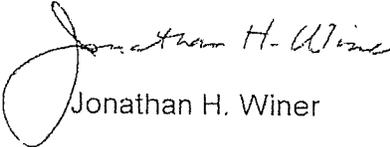
Conclusion

Once again, GSHA supports the proposed legislation, appreciates the opportunity to provide these comments, and would be pleased to respond to any questions or provide further information if needed.

Thank you again for your continuing efforts regarding RPS legislation.

Sincerely,

GRANITE STATE  
HYDROPOWER ASSOCIATION



Jonathan H. Winer

Copies:

Members of the Committee

Ms. Joanne Morin  
Mr. Robert Scott  
NH Department of Environmental Services  
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