APPENDIX A
NOTATION

Let A and B be two sets. The following notation is from Färe, Rolf, Shawna Grosskopf, and C. A. Knox Lovell, 1994.

x		vector of inputs $(x_1, x_2, ... x_I)$.
u		vector of outputs $(u_1, u_2, ... u_J)$
x_i		input i.
u_j		output j.
I		inputs 1,….,i,…,I
J		outputs 1,…,j,…,J
t		time period
$\in$	$a \in A$	a is an element in A
$\notin$	$a \notin A$	a is not an element in A
$\subseteq$	$A \subseteq B$	A is a subset of B
$\cup$	$A \cup B$	$\{x: x \in A$ and $x \in B\}$
$\cap$	$A \cap B$	$\{x: x \in A$ or $x \in B\}$
$\Re^N$		Euclidean space of dimension N
$\geqq$		$x, y \in \Re^N$, $x \geqq y$ if and only if $x_n \geqq y_n$, $n = 1, 2, \ldots, N$
$\geq$		$x \geq y$ if and only if $x \geqq y$ and $x \neq y$
>*		$x >^* y$ if and only if $x_n \geqq y_n$ or $x_n = y_n = 0$, $n = 1, 2, \ldots N$
$\Re_+^N$		$\Re_+^N = \{x: x \in \Re^N, x \geqq 0\}$
Σ		sum sign
$\exists$		there exists
$\forall$		for all
$\neg$		logical not
s.t.		subject to
A is convex		for all $0 \leqq \lambda \leqq 1$, $x, y \in A$, $\lambda x + (1-\lambda)y \in A$