## 8]gWcjYf'K\m'@YZhcjYf'@Ybh]`g'HUghY 6YhhYf.'H\Y'GW]YbWY'FYjYU`YX°

8]gWcj Yf'h\Y'gW]YbWY'VY\]bX'k\m'`Ybh]`g'UbX'ghYk g'hUghY VYhhYf'h\Y'bYl h'XUmž'Ug'W'`]bUfm'Yl dYfh'<Y]bn'K i h\'Yl d`U]bg \_Ym'Z'Uj cf!Yb\UbW]b['dfcWYggYg"



Bc \ Umi b U \ X \ f Y \ W \ j \ b \ Y \ U \ W \ U \ X \ g c b \ J V \ Y \ Y b \ Y \ h Y \ h K \ c \ \ Ug \ Y j \ Y f \ Y b \ c m Y \ X \ U \ Y \ U f h m \ g h Y k \ c \ C Z \ Y b h j \ g \ W \ b \ U h h Y \ g h \ Z g \ Y g \ g Y Y a \ h c \ h U g h Y j \ Y b \ V Y h h Y \ f \ h \ Y \ b Y \ h X \ U m \ H \ ] g \ d \ Y b c a \ Y b c b \ j g b \ h \ d \ g h \ U \ a \ U h h Y \ f \ c Z' d Y \ f g c b U \ d f Y \ Z Y \ f Y b \ W \ \ h \ Y f Y \ g \ g W \ Y b \ W \ U h \ d \ U m \ Y \ f Y \ " \ 5 \ W \ c \ f X \] b \ [ \ h c \ '9 \ '8 \] U \ f] c \ z' \ W \ \ ] b \ U \ m \ Y \ f Y \ g \ g W \ Y \ b M \ Y \ d \ U \ J \ b g' h \ U h \ X \ f Y \ g h \ J \ b \ [ \ h \ Y \ W c \ c \ ] b \ [ \ U b X \ f Y \ g h \] b \ [ \ d c W \ g g z' \ Z c c X \ c g Y g \ a \ c \] g h \ f Y \ h \ f c i \ [ \ Y j \ U d c f U h \] c b z' \ Y U X \] b \ [ \ h c \ U \ W \ b h f U h \] c b c Z' U f c a \ U h \] W \ c a \ d c i \ b X g' h \ U h Y b \ U b W \ g' h \ Y \ c j \ Y f U \ \ Z U j \ c f' c Z' h \ Y \ X \] g \ "

 $\label{lem:charge_constraint} K \ i \ h \ ][ \ h][ \ h][ \ c \$ 

 $h\ Y\ gUi\ WW\ cf'Vfch\ \check{z}'Ybf]W\ ]b[\ 'h\ Y\ 'hUghY\ 'UbX'\ a\ U_]b[\ 'YUW\ 'V]hY a\ cfY\ 'gUh]gZm]b[\ ''\ 5g'ZUj\ cfg'\ a\ Uffm'UbX'XYj\ Y\ cd'\ cj\ Yf'h]a\ Y\check{z}'h\ Y fYgi\ `h']g'U'\ a\ cfY'VU\ UbWX'\ hUghY'\ dfcZ]\ Y'h\ Uh'\ a\ Ubm'ZccX'\ cj\ YfgfY\ [g\ '']g\ ''$ 

## H Y GW Y b W 6 Y b X h Y : `Uj cf

5XX]h]cbU``mž'Y`Ya Ybhg'`]\_Y'dfchY]bg'UbX'ghUfW\Yg'UfY'Wfi W]U``]bh\YgY'fYUWh]cbg'': cf'Yl Ua d`Yžk\Yb'\YUh']g'Udd`]YXž'dfchY]bgibXYf[c'XYbUhi fUh]cbž'hfUbgZcfa]b['hYl hi fYž'k\]`Y'ghUfW\Yg[Y`Uh]b]nYž'U`hYf]b['h\Y'X]g\ g'a ci h\ZYY`''=h g'h\]g']bhf]WUhY'XUbW'cZ'Y`Ya Ybhg'h\Uhii bXYfgWcfYg'\ck'Wcc\_]b[']gb h'' gh'UVci hZc``ck]b['fYW]dYg]hg'UVci h'[fUgd]b['h\Y'gW]YbW''cZ'Z'Uj cfXYj Y`cda Ybh''

## : ccX GUZYhm UbX GhcfU[Y]

K \]`Y 'Ya VfUW]b[ 'h\Y 'ZUj cfg cZ'XUm!c`X 'X]g\Yg ']g 'XY`][ \hZi `ž 'ZccX gUZYhm'g\ci `X 'bYj Yf'VY'cj Yf`cc\_YX"'K i h\ 'Ya d\Ug]nYg 'h\Y ]a dcfhUbW 'cZ'dfcdYf'Wcc`]b[ 'UbX'ghcfU[ Y 'hc'dfYj Ybh'VUWhYf]U` [ fck h\"'=h g 'YggYbh]U` 'hc'i gY 'WYUb 'WcbhU]bYfg 'UbX'fYZf][ YfUhY ZccX'dfca dh`m"'Hc'Ybgi fY 'gUZYhmž'`YZhcj Yfg 'WUb'[ YbYfU``m'VY'\_Ydh ]b 'h\Y'Zf]X[ Y 'Zcf'i d'hc'h\fYY 'XUmgž'dfcj ]XYX'h\Ym'UfY'fY\YUhYX h\cfci [ \`m'VYZcfY 'Wcbgi a dh]cb"'I h]`]n]b[ 'U]fh][ \h'WcbhU]bYfg 'WUb\Y'd'fYXi WY'h\Y'f]g\_'cZ'WcbhUa ]bUh]cb"

## 7cbbYWh]b[ 7\Ya ]ghfmUbX 7i ]g]bY

7cc\_]b[ 'hfi `m'fYgYa V`Yg'U'`UVcfUhcfm'YI dYf]a Ybhž'Z]``YX'k ]h\
W\Ya ]\W\`'fYU\\h]cbg'h\Uh'\hfUbgZcfa ']b[ fYX]Ybhg']bhc'XY`][ \hZi `
X]g\Yg'': fca 'cl ]\X\Uh]cb'dfc\\gg\gg\gž'k \]\\\ '\\Ub'\\Ub'\\Ub\'Yg\zefa |b[ ']bh\Y'\\cefa cZ'\Zf\Yg\ 'Zfi ]\hg'\Ub\X'j \Y[ \Yh\U\`\Yg\zefa \Yb\\Y'\Vcb\X!\Zcfa ]b[ ']b\\Yf\U\\h]cbg
h\Uh'\\Udd\Yb'\Xi f]b[ '\Z\Yfa \Yb\\Uh]cb\z'\Yj \Yfm'\Ugd\Y\\h'c\Z'\\cefa ]b[
]bj c`j \Yg'\\X\Ya ]\ghfm'\Uh'\k cf\_\z'\Ug'\bch\Y\X'\Vm'\7i \Yb\hcg'\7i \\\zefa \h]\\\cefa \g''

Gcžh\Y'bYI h'h]a Y'mci 'Z]bX'mci fgY`Z'k ]h\'U'dch'cZ``YZhcj Yf``Ybh]`g cf'U'hUghm'ghYk ž'fYa Ya VYf. 'gcU\_]b[ 'i d'h\cgY'YI hfU'Z'Uj cfg']gb h 'i gh'U'`i W\_m'Wc]bW]XYbWY']h g'U'XY`]W]ci g'WcbgYei YbWY'cZ W\Ya ]ghfm'Uh'k cf\_°

8 YhU]`g	
Cfh	Bc'\Um'i bU'X]fYWWji b'Yl UWhU'X]gdcb]V`Y'Yb
	Y`hYI hc"
EiY``Yb	<ul><li>k k k "Y`X]Uf]c "YW</li></ul>
	<ul><li>`YmYgXY`i b]j Yfgc"Yg</li></ul>
	<ul><li>WiYbhcgWiUbh]Wcg"Wca</li></ul>

6 Ygi W Yb G]Y i bg Ui Z a Y]b!k ]Yb bYh