$$
\begin{aligned}
\max Profit = \\
&- (BatCap * batCosts) \\
&- workingCosts \\
&+ \sum_{t_{quarter}} \\
&\text{accepted RL in \& out:} \\
&+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (\\
&+ (\tfrac{1}{4} * (Q_{RL}^{in}(t_{block}, s_{RL}^{in}) * p_{RL}^{in}(t_{block}, s_{RL}^{in}))) \\
&+ (\tfrac{1}{4} * (Q_{RL}^{out}(t_{block}, s_{RL}^{out}) * p_{RL}^{out}(t_{block}, s_{RL}^{out}))) \\
&+ (\tfrac{1}{4} * (Q_{DA}^{rB}(t_{hour}, s_{RL}^{in}, s_{RL}^{out}) * p_{DA}^{exp}(t_{hour}))) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{-}(t_{quarter}, s_{RA}) * Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{+}(t_{quarter}, s_{RA}) * Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))) \\
&\text{accepted RL in \& declined out:} \\
&+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * (1 - \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))) * (\\
&+ (\tfrac{1}{4} * (Q_{RL}^{in}(t_{block}, s_{RL}^{in}) * p_{RL}^{in}(t_{block}, s_{RL}^{in}))) \\
&+ (\tfrac{1}{4} * (Q_{DA}^{rl}(t_{hour}, s_{RL}^{in}, s_{RL}^{out}) * p_{DA}^{exp}(t_{hour}))) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{-}(t_{quarter}, s_{RA}) * Q_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{+}(t_{quarter}, s_{RA}) * Q_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))) \\
&\text{declined RL in \& accepted out:} \\
&+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} ((1 - \omega_{RL}^{in}(t_{block}, s_{RL}^{in})) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (\\
&+ (\tfrac{1}{4} * (Q_{RL}^{out}(t_{block}, s_{RL}^{out}) * p_{RL}^{out}(t_{block}, s_{RL}^{out}))) \\
&+ (\tfrac{1}{4} * (Q_{DA}^{rO}(t_{hour}, s_{RL}^{in}, s_{RL}^{out}) * p_{DA}^{exp}(t_{hour}))) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{-}(t_{quarter}, s_{RA}) * Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{+}(t_{quarter}, s_{RA}) * Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))) \\
&\text{declined RL in \& out:} \\
&+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} ((1 - (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}))) * (1 - \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))) * (\\
&+ (\tfrac{1}{4} * (Q_{DA}^{rN}(t_{hour}, s_{RL}^{in}, s_{RL}^{out}) * p_{DA}^{exp}(t_{hour}))) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{-}(t_{quarter}, s_{RA}) * Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \\
&+ (\sum_{s_{RA}} \omega_{RA}(s_{RA}) * p_{RA}^{+}(t_{quarter}, s_{RA}) * Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))) \\
&\forall t_{hour} = \left\lfloor \frac{t_{quarter}}{4} \right\rfloor, t_{block} = \left\lfloor \frac{t_{quarter}}{16} \right\rfloor, \omega_{RA}(s_{RA}) = 1/|s_{RA}|
\end{aligned}
\tag{0.1}
$$

$$workingCosts = \sum_{t_{quarter}}$$

accepted RL in & out:

$$\sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))) * ($$
$$+ \sum_{s_{RA}} WP_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{-} * \omega_{RA}(s_{RA}))$$
$$+ \sum_{s_{RA}} WP_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{+} * \omega_{RA}(s_{RA}) \tag{0.2}$$

accepted RL in & declined out:

$$+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * (1 - \omega_{RL}^{out}(t_{block}, s_{RL}^{out})))) * ($$
$$+ \sum_{s_{RA}} WP_{RA}^{inrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{-} * \omega_{RA}(s_{RA}))$$
$$+ \sum_{s_{RA}} WP_{RA}^{outrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{+} * \omega_{RA}(s_{RA})$$

declined RL in & accepted out:

$$+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} ((1 - \omega_{RL}^{in}(t_{block}, s_{RL}^{in})) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))) * ($$
$$+ \sum_{s_{RA}} WP_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{-} * \omega_{RA}(s_{RA}))$$
$$+ \sum_{s_{RA}} WP_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{+} * \omega_{RA}(s_{RA})$$

declined RL in & out:

$$+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (1 - (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * (1 - \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))))) * ($$
$$+ \sum_{s_{RA}} WP_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{-} * \omega_{RA}(s_{RA}))$$
$$+ \sum_{s_{RA}} WP_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) * p_{ER}^{+} * \omega_{RA}(s_{RA})$$
$$\forall t_{hour} = \left\lfloor \frac{t_{quarter}}{4} \right\rfloor \tag{0.3}$$

*profits *profit RL

$$profitRLout = + \sum (t_{block}, + \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (+(4 * (Q_{RL}^{out}(t_{block}, s_{RL}^{out}) * p_{RL}^{out}(t_{block}, s_{RL}^{out}))))) + \tag{0.4}$$

$$+ \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * (1 - \omega_{RL}^{out}(t_{block}, s_{RL}^{out}))) * (+(4 * (Q_{RL}^{in}(t_{block}, s_{RL}^{in}) * p_{RL}^{in}(t_{block}, s_{RL}^{in})))));$$

*profit DA

$$profitDA = \sum(t_{block}, + \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (\sum(t_{hour} \text{map}_h our_b lock(t_{hour}, t_{block}), (Q_{DA}^{rB}(t_{hour}, s_{RL}^{in}$$

(0.5)

*profit RA

$$profitRAin = \sum(t_{block}, + \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (0.25 * \sum(t_{quarter} \text{map}_q uarter_b lock(t_{quarter}, t_{block}$$

(0.6)

$$profitRAout = \sum(t_{block}, + \sum_{s_{RL}^{out}} \sum_{s_{RL}^{in}} (\omega_{RL}^{in}(t_{block}, s_{RL}^{in}) * \omega_{RL}^{out}(t_{block}, s_{RL}^{out})) * (0.25 * \sum(t_{quarter} \text{map}_q uarter_b lock(t_{quarter}, t_{blo}$$

(0.7)

* accepted RL in out:

*accepted RL in declined out:

*declined RL in accepted out:

$$\sum_{Q}^{outrO} RA = \sum((t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.8)$$

$$\sum_{Q}^{inrO} RA = \sum((t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.9)$$

$$\sum_{Q}^{rO} DA(s_{RL}^{in}, s_{RL}^{out}) = \sum((t_{hour}), Q_{DA}^{rO}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.10)$$

$$\sum_{Q} rO_r eload = \sum((t_{hour}, s_{RL}^{in}, s_{RL}^{out}), Q_r O_r eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.11)$$

*declined RL in out:

$$\sum_{Q}^{outrN} RA = \sum((t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.12)$$

$$\sum_{Q}^{inrN}{}_{RA} = \sum((t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})); \tag{0.13}$$

$$\sum_{Q}^{rN}{}_{DA} = \sum((t_{hour}, s_{RL}^{in}, s_{RL}^{out}), Q_{DA}^{rN}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})); \tag{0.14}$$

$$\sum_{Q}{}_{r}eload = \sum((t_{hour}, s_{RL}^{in}, s_{RL}^{out}), Q_{r}eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})); \tag{0.15}$$

* constraints *battery cap

$$BatCap \geq max(Q_{RA}^{inrB}, Q_{RA}^{inrl}, Q_{RA}^{inrO}, Q_{RA}^{inrN}, Q_{RA}^{outrB}, Q_{RA}^{outrl}, Q_{RA}^{outrO}, Q_{RA}^{outrN}); \tag{0.16}$$

$$BatCap \geq max(Q_{RA}^{inrB}, Q_{RA}^{inrl}, Q_{RA}^{inrO}, Q_{RA}^{inrN}, Q_{RA}^{outrB}, Q_{RA}^{outrl}, Q_{RA}^{outrO}, Q_{RA}^{outrN}, \tag{0.17}$$

* $Q_{RL}^{in} * 4, Q_{RL}^{out} * 4$);

*access point:

$$a + \sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), fakeReload_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) + Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), \sum(t_{hour}\mathrm{r} \tag{0.18}$$

$$a + \sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), fakeReload_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) + Q_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), \sum(t_{hour}\mathrm{m} \tag{0.19}$$

$$a + \sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), fakeReload_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) + Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), \sum(t_{hour} \tag{0.20}$$

$$a + \sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), fakeReload_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) + Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), \sum(t_{hour}\mathrm{l} \tag{0.21}$$

*battery performance restrictions:

$$r = BatCap * rBat; \tag{0.22}$$

$$\sum_{s_{RL}^{out}} Q_{RL}^{out}(t_{block}, s_{RL}^{out})) \leq r; \tag{0.23}$$

$$\sum_{s_{RL}^{in}} Q_{RL}^{in}(t_{block}, s_{RL}^{in})) \leq r; \tag{0.24}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.25}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.26}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.27}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.28}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.29}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.30}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.31}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq r/4; \tag{0.32}$$

*batter cap restrictions

$$BatStat(t_{quarter}) \leq BatCap; \tag{0.33}$$

$$\sum_{s_{RL}^{out}} Q_{RL}^{out}(t_{block}, s_{RL}^{out})) * 4 \leq BatCap; \tag{0.34}$$

$$\sum_{s_{RL}^{in}} Q_{RL}^{in}(t_{block}, s_{RL}^{in})) * 4 \leq BatCap; \tag{0.35}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \tag{0.36}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \tag{0.37}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \tag{0.38}$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \quad (0.39)$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \quad (0.40)$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \quad (0.41)$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \quad (0.42)$$

$$\sum((s_{RA}, s_{RL}^{in}, s_{RL}^{out}), Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \leq BatCap; \quad (0.43)$$

*battery status restrictions *expectet battery value in t+1:

*accepted RL in out: $+\sum_{s_{RL}^{out}}\sum_{s_{RL}^{in}}\sum(t_{block}\text{map}_{quarter_block}(t_{quarter}, t_{block}), (\omega_{RL}^{in}(t_{block}, s_{RL}^{in})*\omega_{RL}^{out}(t_{block}, s_{RL}^{out})))*$
$(+\sum(t_{hour}\text{map}_{quarter_hour}(t_{quarter}, t_{hour}), Q_rB_reload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})/4)+\sum_{s_{RA}} fakeReload_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})+$
$((1/card(s_{RA}))*(Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))))-\sum_{s_{RA}} fakeReload_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})+((1/card(s_{RA}))*$
$(Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})))))))$ **accepted RL in declined out : $+\sum_{s_{RL}^{out}}\sum_{s_{RL}^{in}}\sum(t_{block}\text{map}_{quarter_block}(t_{quarter}, t_{block}), (\omega$
$(1-\omega_{RL}^{out}(t_{block}, s_{RL}^{out}))))*(+\sum(t_{hour}\text{map}_{quarter_hour}(t_{quarter}, t_{hour}), Q_rl_reload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})/4)+\sum_{s_{RA}} fakeReload_{RA}^{inrl}(t_{qua}$
$((1/card(s_{RA}))*(Q_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))))-\sum_{s_{RA}} fakeReload_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})+((1/card(s_{RA}))*$
$(Q_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})))))))$

*declined RL in accepted out: $+\sum_{s_{RL}^{out}}\sum_{s_{RL}^{in}}\sum(t_{block}\text{map}_{quarter_block}(t_{quarter}, t_{block}), ((1-\omega_{RL}^{in}(t_{block}, s_{RL}^{in}))*$
$\omega_{RL}^{out}(t_{block}, s_{RL}^{out})))*(+\sum(t_{hour}\text{map}_{quarter_hour}(t_{quarter}, t_{hour}), Q_rO_reload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})/4)+\sum_{s_{RA}} fakeReload_{RA}^{inrO}(t_{quarter}$
$((1/card(s_{RA}))*(Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))))-\sum_{s_{RA}} fakeReload_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})+((1/card(s_{RA}))*$
$(Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})))))))$ **declined RL in out : $+\sum_{s_{RL}^{out}}\sum_{s_{RL}^{in}}\sum(t_{block}\text{map}_{quarter_block}(t_{quarter}, t_{block}), (1-$
$(\omega_{RL}^{in}(t_{block}, s_{RL}^{in})*(1-\omega_{RL}^{out}(t_{block}, s_{RL}^{out})))))*(+\sum(t_{hour}\text{map}_{quarter_hour}(t_{quarter}, t_{hour}), Q_rN_reload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})/4)+$
$\sum_{s_{RA}} fakeReload_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})+((1/card(s_{RA}))*(Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))))-\sum_{s_{RA}} fakeReload_{RA}^{outrN}(t_{quarter}, s$
$((1/card(s_{RA})) * (Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})))))); *$

$$fakeReload_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.44)$$

$$fakeReload_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.45)$$

$$fakeReload_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{inrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.46)$$

$$fakeReload_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{outrl}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.47)$$

$$fakeReload_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.48)$$

$$fakeReload_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.49)$$

$$fakeReload_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.50)$$

$$fakeReload_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) = WP_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.51)$$

$$testSPM(t_{quarter}, s_{RA}) = \omega_{RA}(s_{RA})_{c}^{out} all(t_{quarter}, s_{RA}) - 0.1 * seriesOne(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}); \quad (0.52)$$

$$0 \leq Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) + (m * (1 - seriesOne(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}))); \quad (0.53)$$

$$0 \geq Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) - (m * seriesOne(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.54)$$

*RA dynamics *out

*park restrictions:

$$\sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{DA}^{rB}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \leq parkCap * parkProfile(t_{hour}) - \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{r}B_{r}eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \quad (0.55)$$

$$\sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{DA}^{rI}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \leq parkCap * parkProfile(t_{hour}) - \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{r}I_{r}eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})); \quad (0.56)$$

$$\sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{DA}^{rO}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \leq parkCap * parkProfile(t_{hour}) - \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{r}O_{r}eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \quad (0.57)$$

$$\sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{DA}^{rN}(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \leq parkCap * parkProfile(t_{hour}) - \sum((s_{D}A, s_{RL}^{in}, s_{RL}^{out}), Q_{r}N_{r}eload(t_{hour}, s_{RL}^{in}, s_{RL}^{out})) \quad (0.58)$$

*market restrictions:

$$(Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{out}(t_{block}, s_{RL}^{out})); 1 \quad (0.59)$$

$$(Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{out}(t_{block}, s_{RL}^{out})); 1 \quad (0.60)$$

$$(Q_{RA}^{inrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{in}(t_{block}, s_{RL}^{in})); 1 \quad (0.61)$$

$$(Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{in}(t_{block}, s_{RL}^{in})); 1 \quad (0.62)$$

$$(Q_{RA}^{outrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{out}(t_{block}, s_{RL}^{out}));1 \quad (0.63)$$

$$(Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{out}(t_{block}, s_{RL}^{out}));1 \quad (0.64)$$

$$(Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{in}(t_{block}, s_{RL}^{in}));1 \quad (0.65)$$

$$(Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out})) \geq \sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{in}(t_{block}, s_{RL}^{in}));1 \quad (0.66)$$

* accepted RL in out:

$$Q_{RA}^{inrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{in}max(t_{quarter}, s_{RA}); \quad (0.67)$$

$$Q_{RA}^{inrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{in}max(t_{quarter}, s_{RA}); \quad (0.68)$$

$$Q_{RA}^{inrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{in}max(t_{quarter}, s_{RA}); \quad (0.69)$$

$$Q_{RA}^{inrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{in}max(t_{quarter}, s_{RA}); \quad (0.70)$$

$$Q_{RA}^{outrB}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{out}max(t_{quarter}, s_{RA}); \quad (0.71)$$

$$Q_{RA}^{outrI}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{out}max(t_{quarter}, s_{RA}); \quad (0.72)$$

$$Q_{RA}^{outrO}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{out}max(t_{quarter}, s_{RA}); \quad (0.73)$$

$$Q_{RA}^{outrN}(t_{quarter}, s_{RA}, s_{RL}^{in}, s_{RL}^{out}) \leq q_{RA}^{out}max(t_{quarter}, s_{RA}); \quad (0.74)$$

$$\sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{in}(t_{block}, s_{RL}^{in})) * 0.25 \leq BatCap - BatStat(t_{quarter});1 \quad (0.75)$$

$$\sum(t_{block}\text{map}_{q}uarter_{b}lock(t_{quarter}, t_{block}), Q_{RL}^{out}(t_{block}, s_{RL}^{out})) * 0.25 \leq BatStat(t_{quarter});1 \quad (0.76)$$

*accepted RL in declined out: *declined RL in accepted out: *declined RL in out: