Appendix A. Decomposition Algorithm

Algorithm 1 Dual-Based Partitioning of the Input Data

$VC_t \leftarrow$ *Thermal generator variable cost*
$VC_w \leftarrow$ *Wind generator variable cost*
$VC_{nsp} \leftarrow$ *NSP cost*
$T \leftarrow$ *Ordered index set with the time representation*
$Basis[\forall t \in T] \leftarrow$ **false**
$Model \leftarrow$ *Complete model solution*
$MC[t] \leftarrow$ *Marginal costs from Model*
$DualRUP[t] \leftarrow$ *Ramp-up constraint duals from Model*
$DualRDN[t] \leftarrow$ *Ramp-down constraint duals from Model*
$DualWnd[t] \leftarrow$ *Wind availability duals from Model*
for all $mc \in MC | (mc > 0 \wedge mc \notin \{VC_t, VC_w\})$ **do**
  $Lengths[mc] \leftarrow$ *Multiple of* VC_t closest to mc
end for
while $t \leq \max\{T\}$ **do**
  if $(MC[t] \notin \{VC_t, VC_w\})$ **then**
    if $MC[t] < 0$ **then**
      Find next $t' > t$ such that $MC[t'] = VC_{nsp}$
      $Basis[t : t'] \leftarrow$ **true**
      $t \leftarrow t' + 1$
    else if $MC[t] = VC_{nsp}$ **then**
      Find next $t' > t$ such that $MC[t'] \in [VC_t, VC_w]$
      $Basis[t : t'] \leftarrow$ **true**
      $t \leftarrow t' + 1$
    else
      $l \leftarrow Lengths[MC[t]]$
      if $DualRUP[t-1] > 0$ **then**
        $t' \leftarrow max\{t'\} | (t' < (t - l) \wedge DualWnd[t'] > 0)$
        $Basis[t' : t] \leftarrow$ **true**
      else if $DualRDN[t-1] > 0$ **then**
        $t' \leftarrow min\{t'\} | (t' < (t + l) \wedge DualWnd[t'] > 0)$
        $Basis[t : t'] \leftarrow$ **true**
      end if
      $t \leftarrow t' + 1$
    end if
  end if
  $Partition[p] \leftarrow$ Subsets of longest contiguous t
    such that $Basis[t_{start} : t_{end}] =$ **true**
end while